



# SERVICE MANUAL



19298

KA7E WITH STAND ACCESSORY SHOWN

## KA SERIES ELECTRIC ROTARY OVENS

Information in this manual supercedes TSB 1406.

KA7E	ML-137701	SELF-CLEAN, GLASS BACK
	ML-137709	SELF-CLEAN, SOLID BACK
KA7EM	ML-137710	MANUAL-CLEAN, GLASS BACK WITH GREASE ASSIST
	ML-137711	MANUAL-CLEAN, GLASS BACK WITHOUT GREASE ASSIST
	ML-137713	MANUAL-CLEAN, SOLID BACK WITH GREASE ASSIST
	ML-137714	MANUAL-CLEAN, SOLID BACK WITHOUT GREASE ASSIST

### - NOTICE -

This Manual is prepared for the use of trained Hobart Service Technicians and should not be used by those not properly qualified.

This manual is not intended to be all encompassing. If you have not attended a Hobart Service School for this product, you should read, in its entirety, the repair procedure you wish to perform to determine if you have the necessary tools, instruments and skills required to perform the procedure. Procedures for which you do not have the necessary tools, instruments and skills should be performed by a trained Hobart Service Technician.

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# GENERAL

**⚠ WARNING** Oven cleaners are corrosive and can cause chemical burns. Rubber gloves, goggles and protective clothing are required. Read and follow the instructions for the oven cleaner.

**NOTICE** Safety standards require that, when the rotary oven's electric supply line is properly connected to the electrical power supply, an adequate means must be provided to limit movement of the oven without applying stress to the electrical conduit. This means that, as part of the installation, the oven must be secured to either the wall or the floor to limit movement of the oven and, thus, preventing damage to the flexible electrical conduit during cleaning, maintenance and service operations.

## REFERENCE INFORMATION

### TSB'S & TSI'S

**NOTE:** Links or references to the TSB's are provided here and in the appropriate sections of service manual.

TSB 1381	KA7E ROTARY OVEN SCRAMBLED VFD DISPLAY.	
TSB 1383	ROTISSERIE OVENS HR5E, HR7E AND KA7E NEW DRIVE MOTOR ASSEMBLIES.	See Multimedia section in TIS.
TSB 1400	KA7E - LEAKS AT DRIVE ARM GASKET DURING WASH CYCLE.	
TSB 1417	KA7E - CLOGGING AT INPUT AND OUTPUT OF PERISTALTIC PUMPS.	See Multimedia section in TIS.
TSI	HR7E AND KA7E ROTISSERIE OVEN ROTOR CRANK ARM DISENGAGING FROM ROTOR.	See Multimedia section in TIS.

### Instructions & Specifications

Model	Specifications	Instructions Manual
KA7E	F-40182	F-35521
KA7EM	F-40287	F-45111

## INTRODUCTION

All pictures and illustrations shown are of a KA7E unless otherwise specified. When specific model number designations are needed for clarity, they are added to the procedure or picture.

### General

- Capacity of the KA series seven spit oven is 21 to 35 chickens.
- Stacking kit available to stack ovens.
- Refer to the Specifications sheet for oven Installation details and Instructions manual for operating and cleaning instructions.

### KA7E - Model Description

- Rotisserie oven with automatic clean cycle.

- Electronic control with message center, time, temperature and program display features.
- Pass through controls on the unload side to snooze cook cycle, silence beeper and stop cook cycle.
- Equipped with grease assist and chemical cleaner peristaltic pumps.
- Pump for automatic draining.

### KA7EM - Model Description

- Rotisserie oven without automatic clean cycle features (manual cleaning).
- Electronic control with time, temperature and program display features.
- Manual drain valve.

- Equipped with grease assist and chemical cleaner peristaltic pumps.
- Available with a grease assist peristaltic pump to remove grease during a cook cycle (optional).

## ELECTRICAL SPECIFICATIONS

KA7E AND KA7EM			
VOLTS	PHASE	WATTAGE	AMPERAGE
208	1	9,300	42.8
208	3	9,300	24.7
240	1	9,300	37.7
240	3	9,300	21.8

**NOTE:** Separate power supplies must be used when stacking two ovens.

### INSTALLATION NOTE:

Before putting oven into service, check to ensure incoming power terminal block TB6 wire retaining screws are tight.

Ovens mounted on casters or installed on stands with casters must be provided with an adequate restraining means to guard against transmission of strain to the electric supply line. Instructions for tethering are included in stacking kit instructions and with optional oven stand. Disconnect the flexible electrical conduit(s) before disconnecting the restraint.

## WATER SUPPLY REQUIREMENTS (KA7E ONLY)

**NOTE:** For proper operation, use only **HOT** water supply. For installations at the end of a long hot water line, a second pre-rinse may be required to be programmed to prime the line.

### Hot water supply:

- 3/4" hose bib fitting.
- 0.5 GPM @ 25-50 PSI.
- 120°F - 140°F.
- Recommended hardness, 4 - 6 grains.
- Minimum conductivity required, 30 MICROMHOS/CM.

## TOOLS

- Standard set of hand tools

- VOM with AC current tester (Any VOM with a sensitivity of at least 20,000 ohms per volt can be used.)
- Temperature Tester
- Field Service Grounding Kit
- Torque wrench capable of measuring up to 45 in-lbs.
- Jewelers screwdriver
- Power switch and momentary switch removal tool (two required) made locally to dimensions in graphic below

**NOTE:** Material for tool can be aluminum, hard plastic or any other hard material which can be easily fabricated to dimensions.

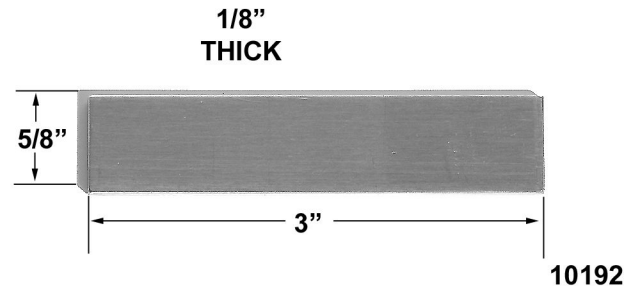


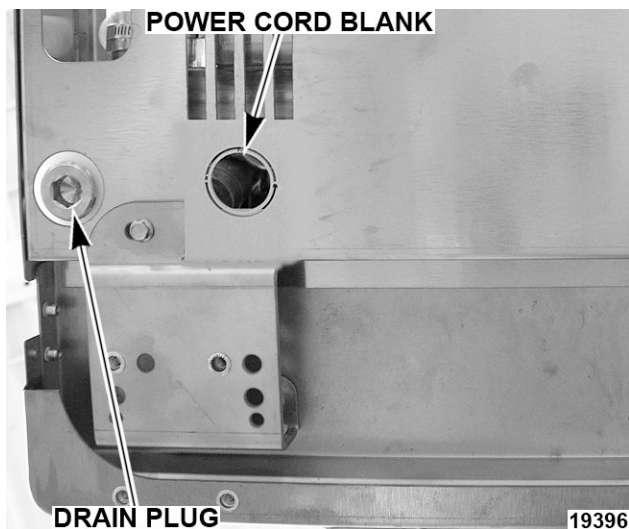
Fig. 1

## ACCESSORY STAND INSTRUCTIONS

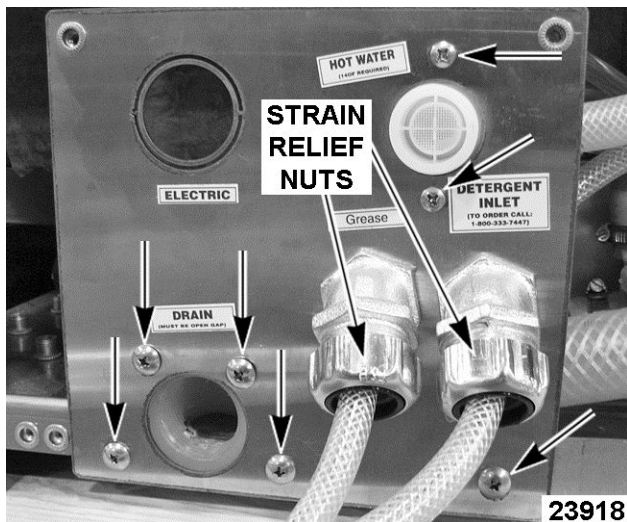
**NOTE:** Separate units can be lifted by means of a forklift. To do this, open both doors. Remove fan cover. Slide forks all of the way thru top of oven. Make sure forks rest on the frame member and are spread as far apart as possible. Stacked units must not be lifted in this manner.

### KA7E Self-Clean (ML-137701, ML-137709)

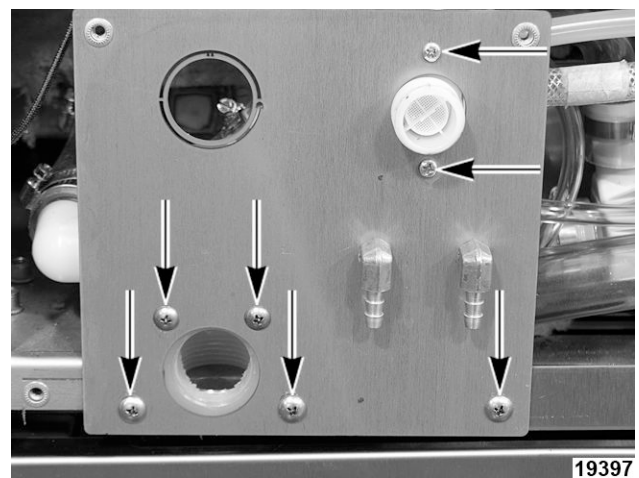
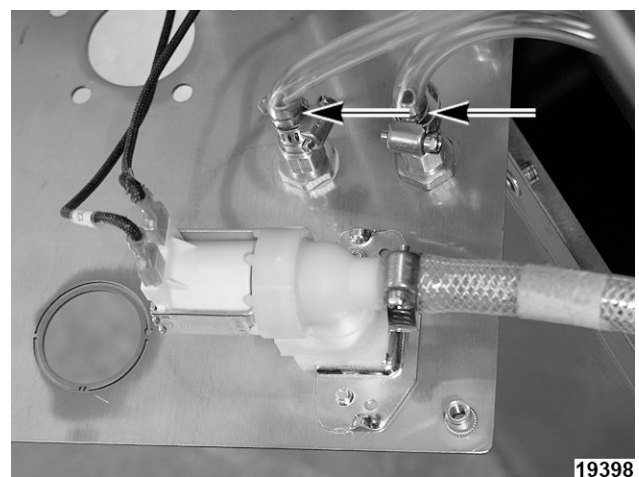
1. Remove Right Side Cover.
2. With oven lifted, remove drain plug and save it. Drain hose is connected here and routed down thru base.
3. Remove electric power cord blank and install proper restraining fitting for power cord.

**BOTTOM VIEW SHOWN**

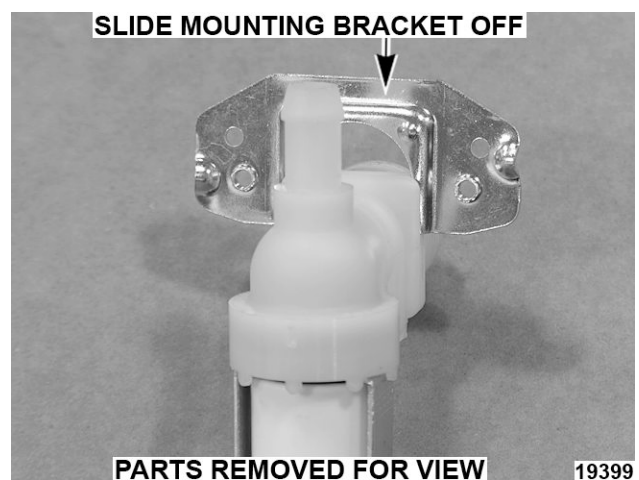
4. Remove screws securing water fill valve to utility plate.
5. Remove screws securing drain manifold to utility plate and utility plate to frame.
6. Current construction - Remove strain relief nuts securing chemical-in and grease-out hoses.
  - A. Remove hoses from strain relief fittings (pull hoses through fittings but leave connected to machine).

**CURRENT CONSTRUCTION**

7. Previous construction - Remove chemical-in and grease-out hoses from 45 degree strain relief fittings.

**PREVIOUS CONSTRUCTION****Fig. 5**

8. Discard original utility plate, saving screws.
9. Slide mounting bracket off water fill valve.

**Fig. 6**

10. Reinstall mounting bracket to water fill valve (rotated as shown).



Fig. 7

11. Install water valve onto bracket on new utility plate (supplied with stand).



Fig. 8

12. Install new utility plate onto oven using screws removed earlier.
13. Install drain plug removed earlier.
14. Install new hoses supplied with oven and route down into base.

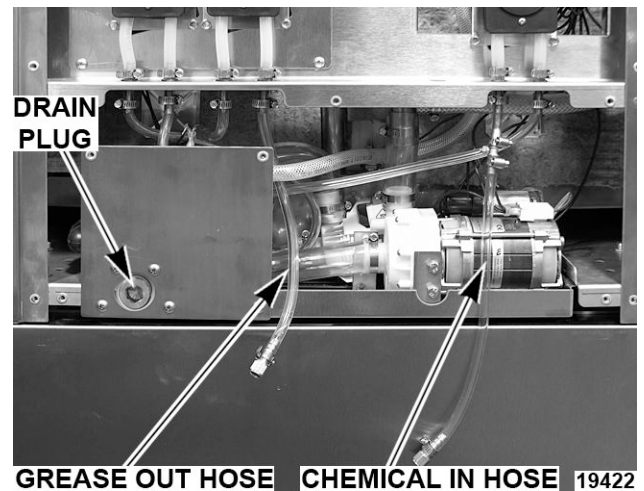


Fig. 9

15. Route water supply through the bottom of the stand and connect. (Fittings mate to  $\frac{3}{4}$  inch male hose bib, not supplied.)
16. Route water drain through the bottom of the stand and connect. (Fittings mate to 1 inch female NPT, not supplied.)
17. Route chemical-in and grease-out hoses down through bottom of machine into stand. Connect hoses to grease vessel and chemical container.
18. Route power cord thru base into oven and connect to terminal block.
19. Proceed to Tether Bracket and Oven Mounting to Stand (KA7E, KA7EM).

#### KA7EM with Grease Assist (ML-137710, ML-137713)

1. Remove Right Side Cover.
2. Remove electric power cord blank. Install power cord restraining fitting (not supplied) in the proper hole E1.

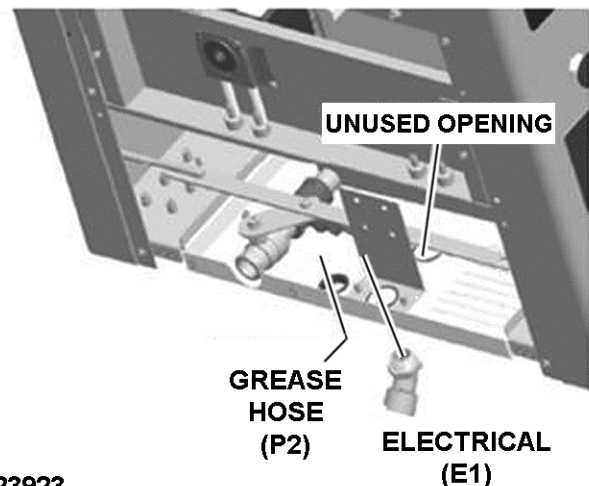
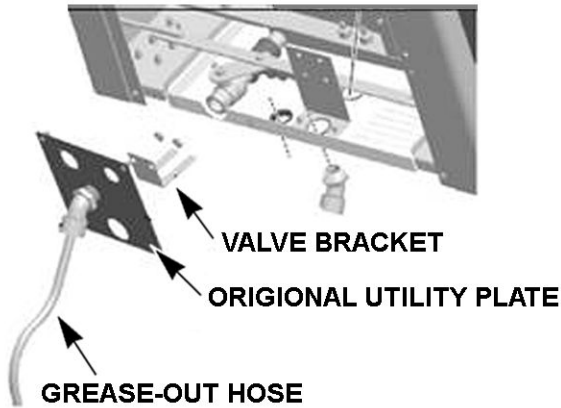


Fig. 10

3. Remove screws and valve bracket from factory standard utility plate.
4. Save screws and bracket. Discard original factory standard utility plate.
5. Remove grease-out hose from 45 degree strain relief fitting.



23924

Fig. 11

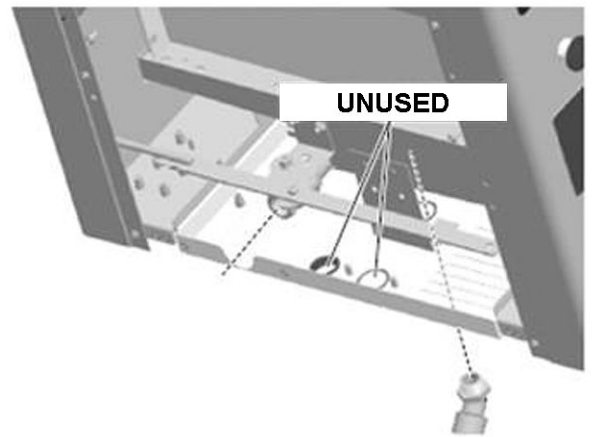
6. Install valve bracket from old plate onto new utility plate (supplied with stand).
7. Install new utility plate assembly onto oven using screws removed earlier.
8. Install  $\frac{3}{4}$ " MNPT to  $\frac{3}{4}$ " ID, 90 deg, Barb Hose Fitting (not supplied) into P1 drain connection.

**NOTE:** P1 drain connection cannot drop through into stand and must exit out the right side of the oven.

9. Route grease-out hose down through bottom of machine into stand.
10. Route power cord through stand up into oven and connect to terminal block.
11. Proceed to Tether Bracket and Oven Mounting to Stand (KA7E, KA7EM).

**KA7EM without Grease Assist (ML-137711, ML-137714)**

1. Remove Right Side Cover.
2. Remove electric power cord blank. Install power cord restraining fitting (not supplied) in the proper hole E1.

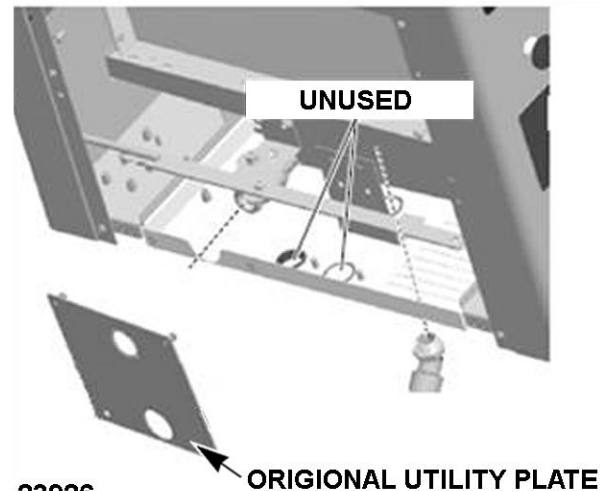


ELECTRICAL (E1)

23925

Fig. 12

3. Remove screws from factory standard utility plate.



23926

Fig. 13

4. Install  $\frac{3}{4}$ " MNPT to  $\frac{3}{4}$ " ID, 90 deg, Barb Hose Fitting (not supplied) into P1 drain connection.
5. Install new utility plate (supplied with stand) assembly onto oven using screws removed earlier.
6. Install Plug Button (supplied with stand accessory) into new utility plate.



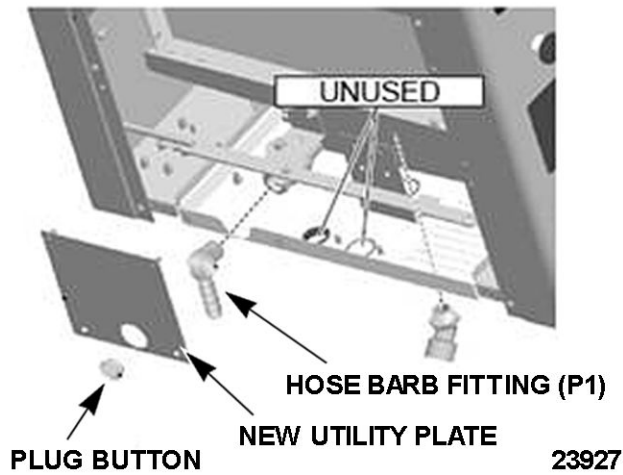


Fig. 14

7. Route power cord through stand up into oven and connect to terminal block.
8. Proceed to Tether Bracket and Oven Mounting to Stand (KA7E, KA7EM).

#### **Tether Bracket and Oven Mounting to Stand (KA7E, KA7EM)**

1. Ensure that tether bracket is installed.
  - A. The bracket must be installed along with one of the swivel casters to a corner as shown using the caster hardware provided. The remaining open hole in the center of the tether bracket is to be used to secure one end of the tether (locally supplied chain, cable, etc.). The other end of the tether is to be secured to an anchoring point in the wall or floor when oven installation is complete. Make sure that during oven movement, no stress is applied to the flexible electrical conduit(s).

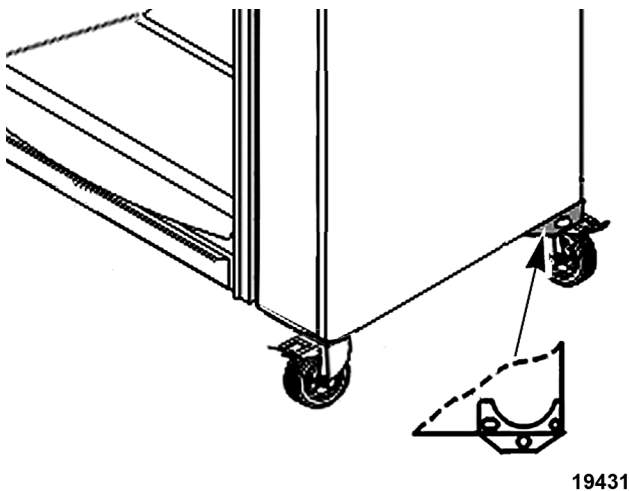


Fig. 15

2. Using holes in oven's caster mounting plate, secure oven to stand using 4 screws and 4 washers provided with stand accessory. Install washers such that bolt does not slip through.

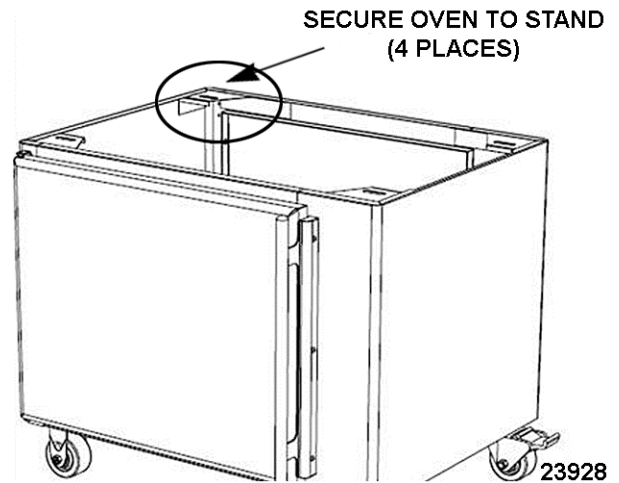


Fig. 16

3. Install all removed covers.
4. Continue with installation per Instructions Manual.

# REMOVAL AND REPLACEMENT OF PARTS

**NOTICE** Due to use of chemical detergents, all interior replacement hardware must be stainless steel hardware as listed in the parts catalog.

## COVERS



**WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

### Pump Cover

1. Remove two thumbscrews securing pump cover and lift cover off.
2. Reverse procedure to install.

**NOTE:** Anytime service is performed requiring the right side cover to be removed, check to ensure incoming power terminal block wire retaining screws are tight.

### Right Side Cover

1. Remove Pump Cover.
2. Remove twelve screws securing right side cover to frame.
3. Loosen one screw securing top center of cover.

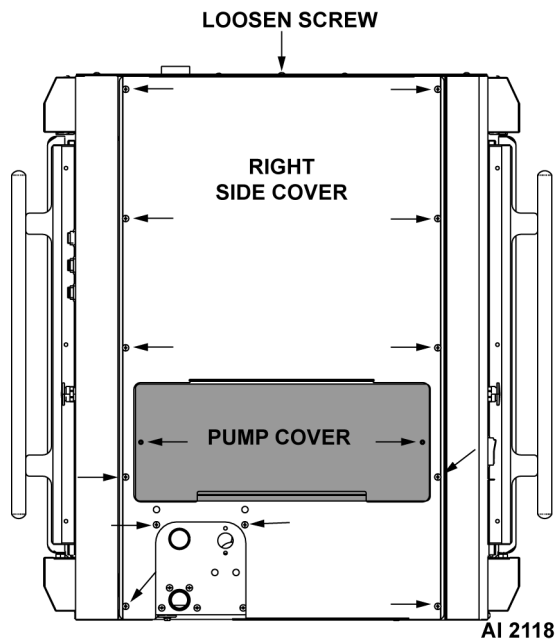


Fig. 17

4. Remove cover.
5. Reverse procedure to install.

### Left Side Cover

1. Remove ten screws securing left side cover to frame.
2. Loosen one screw securing top center of cover.

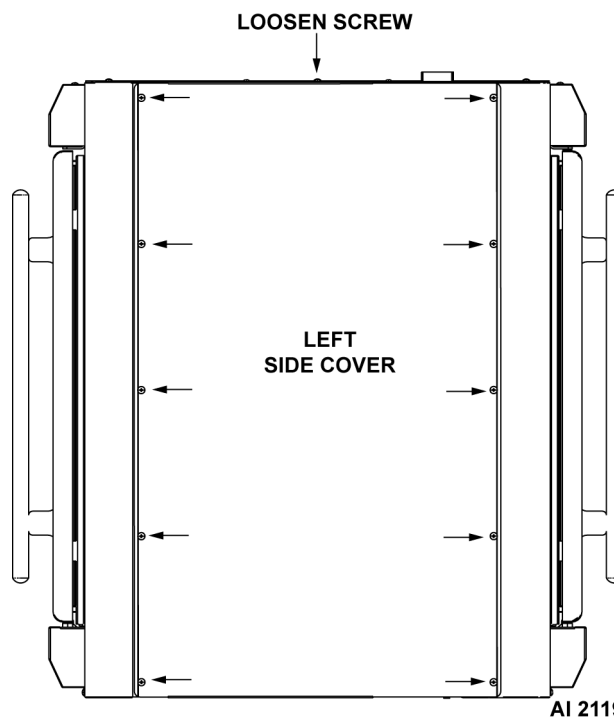


Fig. 18

3. Remove cover.
4. Reverse procedure to install.

### Top Cover (Control Panel)

1. Remove screws securing top cover over controls area.
2. Remove cover.
3. Reverse procedure to install.

### Top Cover

1. Remove screws securing Top Cover (Control Panel).
2. Remove cover.
3. Remove remaining screws securing top cover and lift cover off.

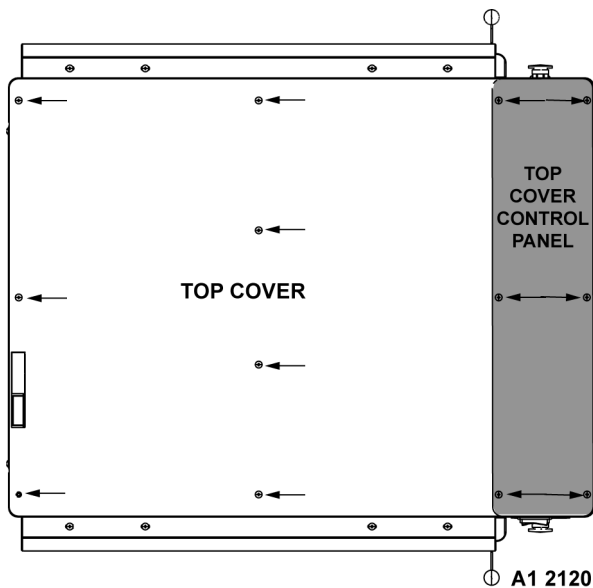


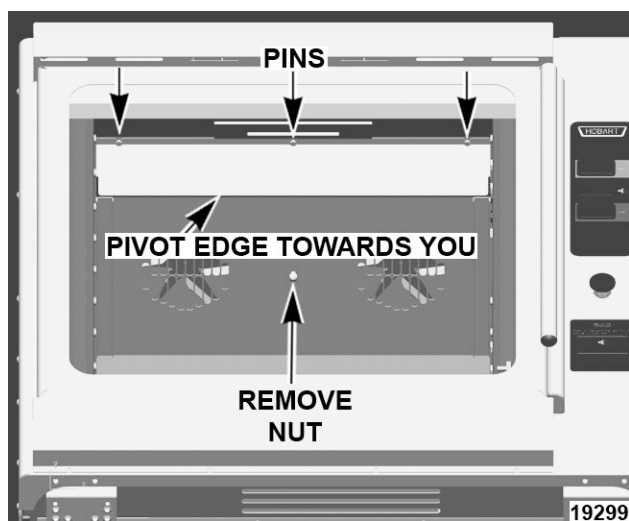
Fig. 19

4. Reverse procedure to install.

#### Fan Cover

1. Open door.
2. Remove nut securing fan cover to top of cavity.
3. Grab deflector edge and pivot edge toward you to disengage cover from studs.
4. Slide cover off studs at opposite side and remove cover.

**NOTE:** Fan cover can be removed thru either door in the same manner.



VIEW - AS LOOKING THROUGH DOOR GLASS

5. Reverse procedure to install.

**NOTE:** Make sure all six studs are engaged properly and that the cover does not hang down.

## DOOR



**WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Remove Left Side Cover.
2. Open oven door and pull inner oven door to overcome magnet hold to main door.



Fig. 21

3. Lift inner door hinge pins out of hinge bushings and lay door on a flat padded surface.

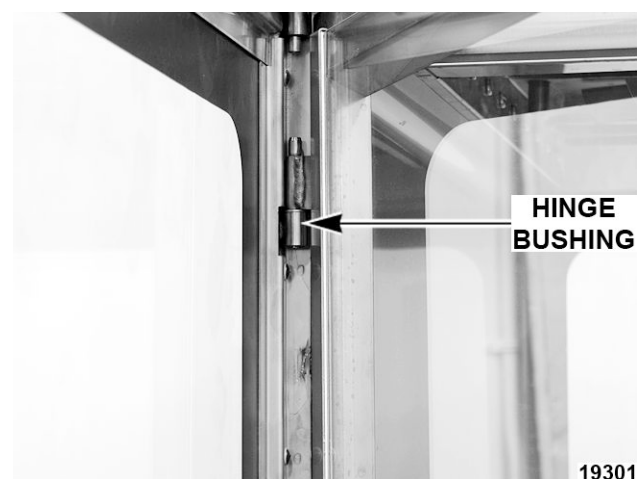


Fig. 22

4. Remove screws securing facade to oven.

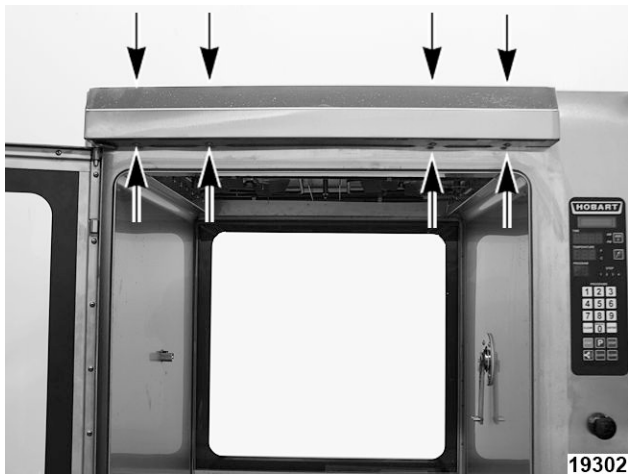


Fig. 23

5. Close door.
6. Remove nuts securing top hinge to cabinet.



Fig. 24

7. Carefully remove hinge plate while supporting hinge backing plate and lift door off lower hinge pin.

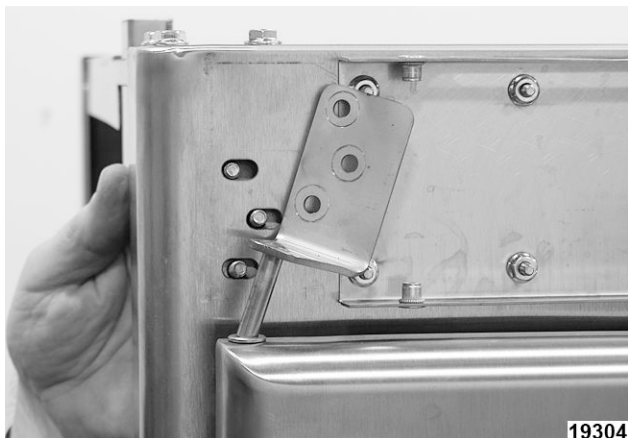


Fig. 25

8. Reverse procedure to install but leave nuts securing hinge plate loose. Perform Door Adjustment.

#### Door Adjustment

1. With top hinge plate mounting nuts loose, use an object to shim handle end of door to make bottom of door parallel to the sump facade.



Fig. 26

2. Tighten hinge plate nuts and check door operation. Make sure there is no interference or rubbing when door is operated. Door must not contact sump facade when opening or closing.
3. Check Door Switch Adjustment (KA7E only; if required). LED at CPU board input X22 should be on when both doors are closed and both door switches are closed.

#### Door Switch Adjustment (KA7E only; if required)

1. With oven top facade removed to access door switch, loosen switch mounting screws and adjust switch as required. LED at CPU board input X22 should be on when both doors are closed and both door switches are closed.
2. Install all covers and check for proper operation.

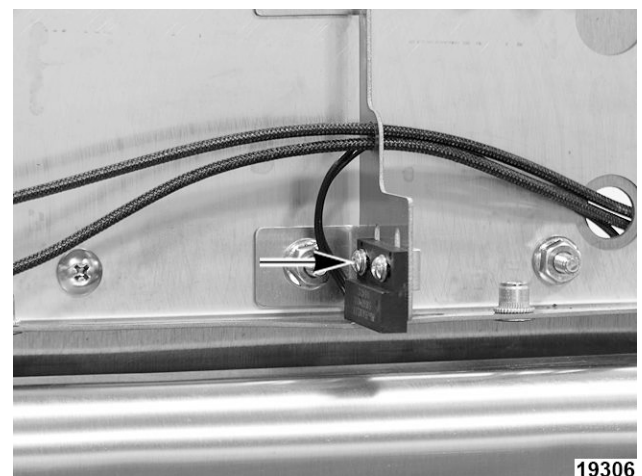


Fig. 27

## DOOR SWITCH MAGNET (KA7E ONLY)



**WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Open oven door and pull inner oven door to overcome magnet hold to main door.



Fig. 28

2. Remove screws securing magnet housing and remove magnet.



Fig. 29

3. Reverse procedure to install and check Door Switch Adjustment (KA7E only; if required).

## OUTER DOOR GLASS



**WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Remove door as outlined under DOOR.
2. Lay door on a flat padded surface.
3. Remove screws securing glass and remove glass.
4. Install new glass in same orientation as old glass.

**NOTE:** Avoid contact such as bumping or hitting, or abrasion of glass edges.

5. Install in reverse order and adjust door as outlined under Door Adjustment.

## WASH ARM, STRAINER PANS, STRAIN PAN SUPPORT, DRAIN SHROUD (KA7E ONLY)



**WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Open oven door.
2. Use strainer pan handle and lift pan out of oven.

**NOTE:** Pan positions are not interchangeable.

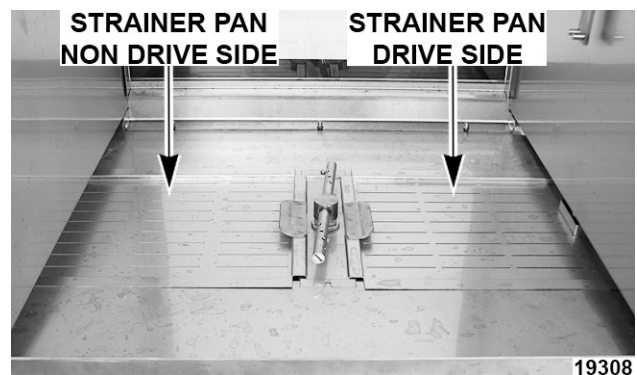


Fig. 30

3. To remove wash arm, unscrew knurled part of wash arm.

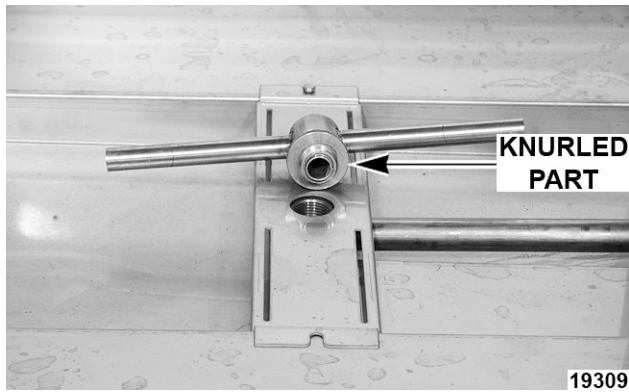


Fig. 31

4. To remove strain pan support, lift end and disengage other end from stud.

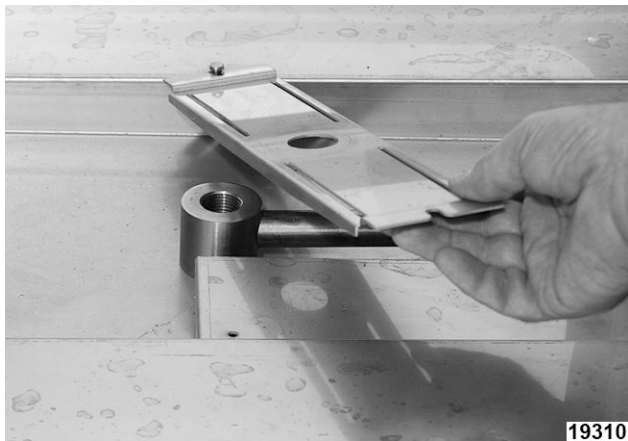


Fig. 32

5. To remove drain shroud, remove nuts and washers securing shroud and lift shroud out of oven.

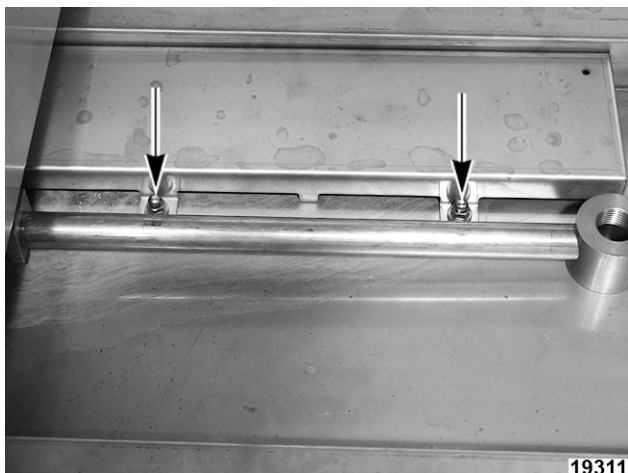


Fig. 33

6. Reverse procedures to install.

## LAMP



**WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

**NOTICE** Do not touch the glass portion of the lamp with your hands. The oil from your hands could affect the operation of the lamp. Skin oil may be removed with alcohol while the lamp is cold.

**NOTE:** Use a clean rag or paper towel to handle replacement lamp.

1. Open door.
2. Remove screws securing facade to oven.

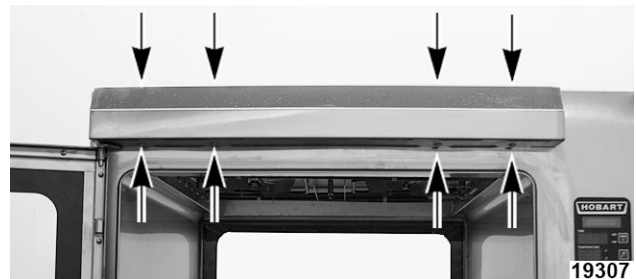


Fig. 34

3. Remove two nuts securing lamp assembly to top of oven.

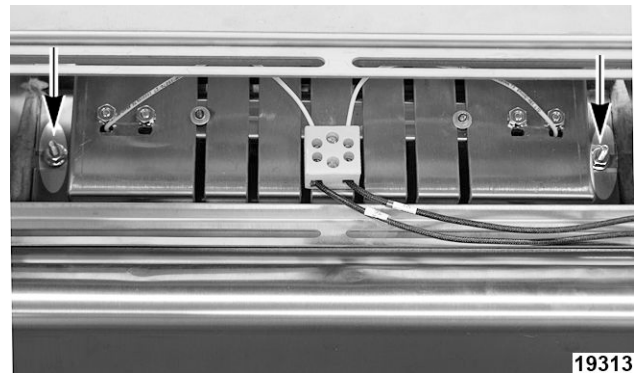
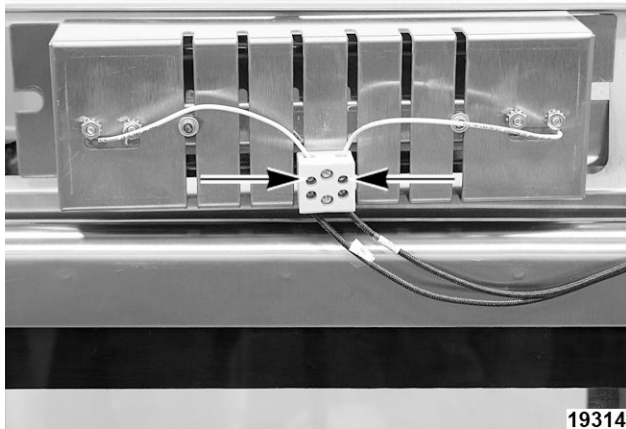


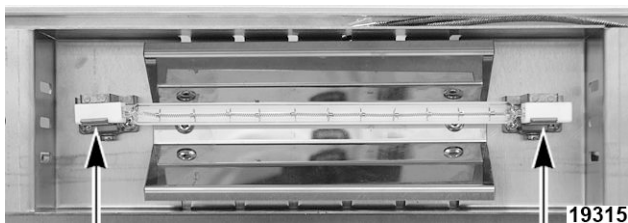
Fig. 35

4. Lift lamp assembly out of oven and support it.
5. Loosen screws in terminal block securing lamp wires and pull wires out of block.



**Fig. 36**

6. Work lamp with wires out of lamp brackets. Wires can not be removed from lamp.



**Fig. 37**

7. Install and tighten insulators evenly to prevent damage.
8. Reverse procedure to install.

## FAN MOTORS ASSEMBLY



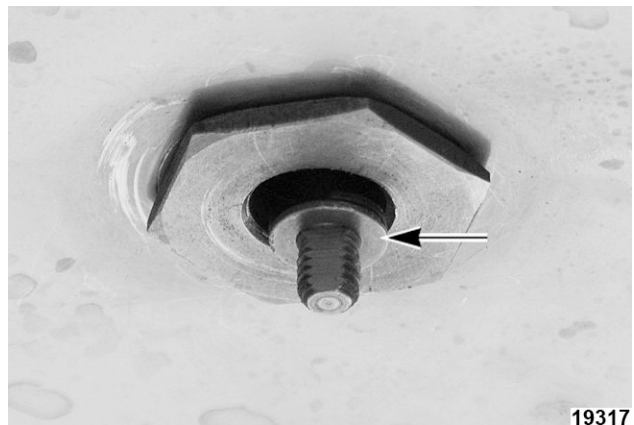
**⚠ WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Remove Right Side Cover and Fan Cover.
2. Remove wing nut securing each fan blade. Nut is left hand thread, turn clockwise to remove.
3. Remove both fan blades.



**Fig. 38**

4. Remove washer from both shafts.



**Fig. 39**

5. Remove C clip from both shafts.



**Fig. 40**

6. Unscrew both fan mounting nuts.

**NOTE:** Check condition of o-ring on fan mounting nut and replace if necessary.

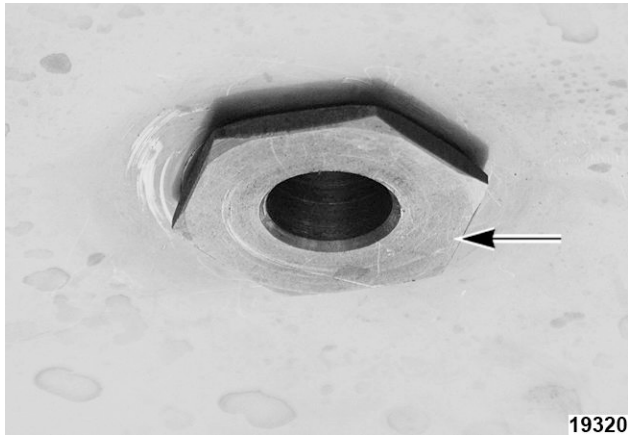


Fig. 41

7. KA7E only:

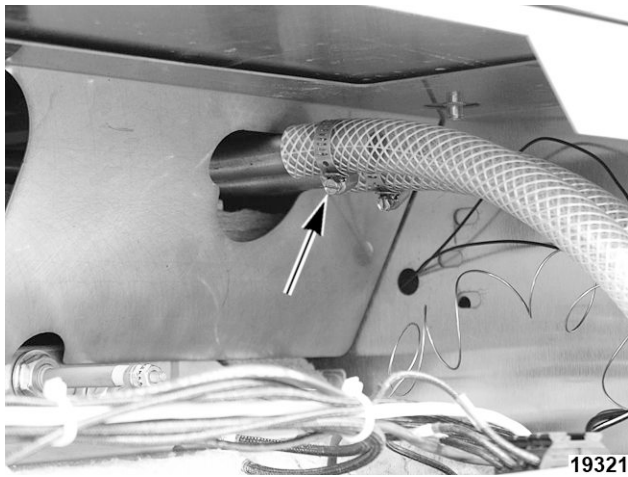


Fig. 42

- A. Loosen hose clamp and remove hose from control side nozzle and pipe assembly.
- B. Remove screws and nuts securing control side nozzle pipe assembly to top of oven.

**NOTE:** Check condition of o-rings on screw heads and replace if necessary.



Fig. 43

C. Work pipe out of oven.



Fig. 44

8. Insert two large screwdrivers or similar objects that can lift fan motor assembly enough for motor shafts to clear inside ceiling.

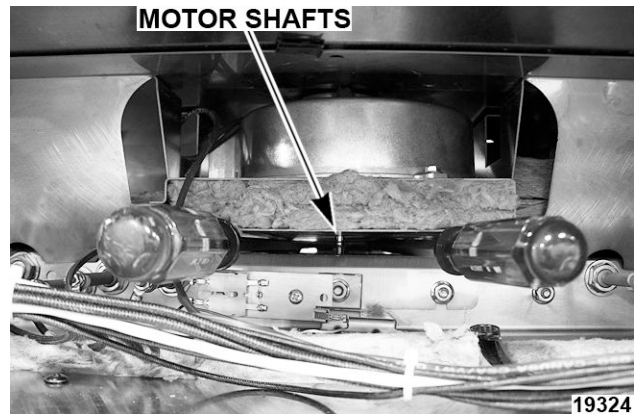


Fig. 45

9. Identify and disconnect motor wires.
10. Carefully slide fan motor assembly out of cavity.
11. Remove screws securing fan motor assembly and lift out.



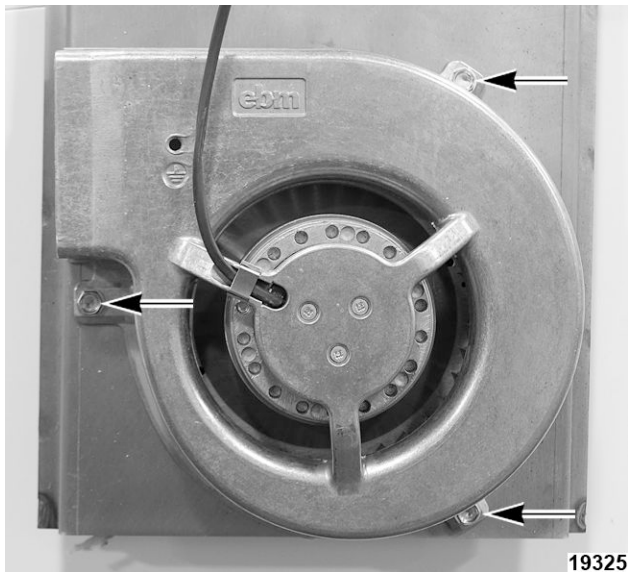


Fig. 46

12. Remove o-ring from old fan motor shaft and install on new fan motor. If not in good condition, install new o-ring.

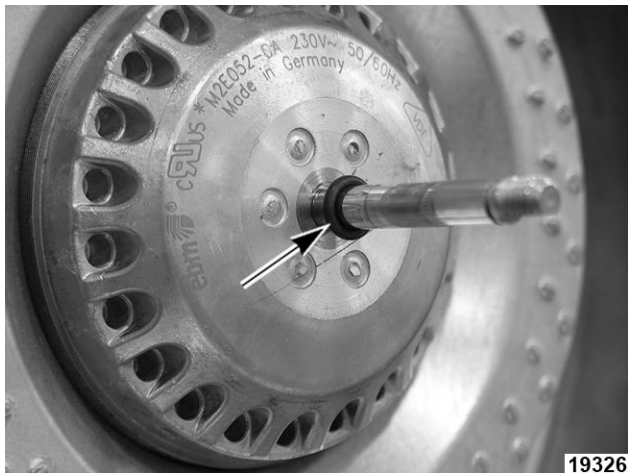


Fig. 47

13. Reverse procedure to install.
14. After installing the fan blade, verify that it does not rub the top of the cavity. If required, remove fan blade and tighten fan mounting nut (shown in Step 6 above).

## HEATING ELEMENTS



**WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Remove Right Side Cover and Fan Cover.

2. Disconnect lead wires from element being replaced.



Fig. 48

3. Use a wrench on element inside oven while removing and installing mounting nut.



Fig. 49

4. Remove nuts securing element being replaced.

**NOTE:** If mounting nuts will not slide over wire lead backup nuts, loosen them or remove them.

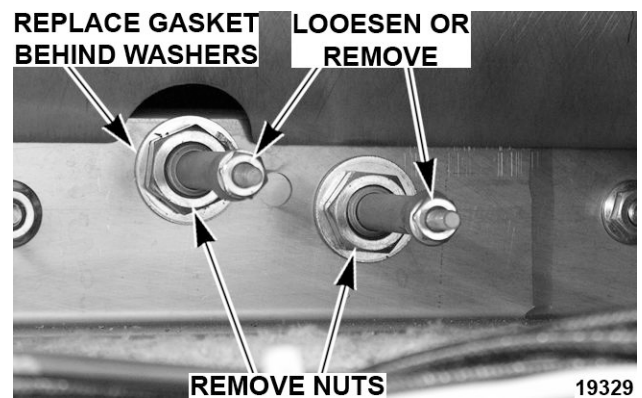
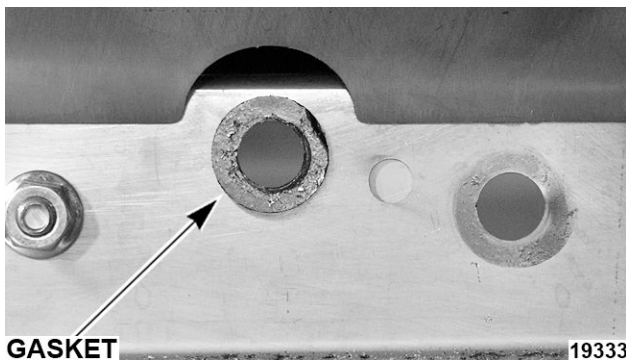


Fig. 50

5. Remove screws securing element support bracket to ceiling and remove bracket.


**Fig. 51**

6. Slide element out of wall.
7. Clean off old gasket that may stick to wall or washer and replace with new gasket (not included with element).


**Fig. 52**

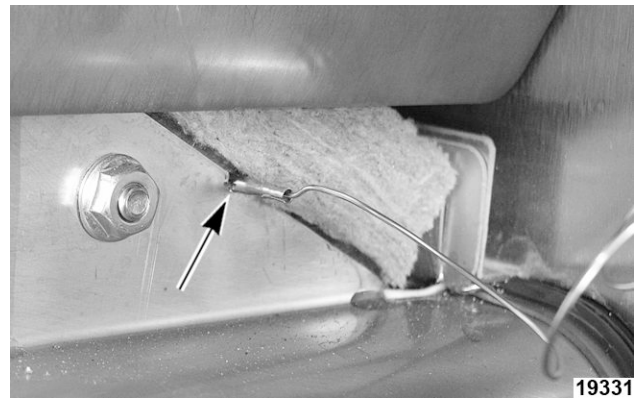
8. Reverse procedure to install.
9. Torque element mounting nuts to 45in-lbs. Use backup wrench on element inside oven to prevent twisting and damage to element.
10. Torque nuts securing wires onto element to 14-20in-lbs. Use a backup wrench on back nut to prevent twisting and damage to element.

## HIGH LIMIT THERMOSTAT



**⚠ WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Remove Right Side Cover.
2. Pull high limit probe out of hole located in top right hand corner.


**Fig. 53**

3. Disconnect wires from high limit thermostat.
4. Remove screws securing high limit to frame.


**Fig. 54**

5. Reverse procedure to install.

**NOTE:** Set the high limit thermostat to its maximum clockwise position.

## TEMPERATURE SENSOR



**⚠ WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Remove Right Side Cover.
2. Remove screw and nut securing temperature sensor to mounting bracket.

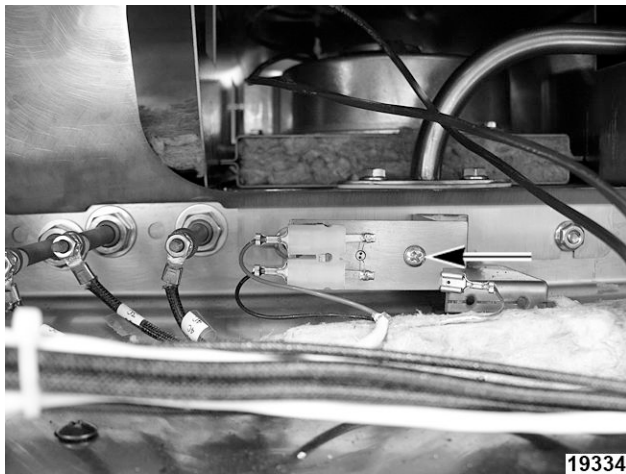


Fig. 55

3. Disconnect wires from temperature sensor.
4. Pull temperature sensor out thru the opening in oven wall.
5. Reverse procedure to install.

## CONTACTORS



**WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Remove Right Side Cover.
2. Disconnect lead wires from contactor being replaced.
3. Push down on top of contactor and pull bottom of contactor out then up to remove it from the din rail.



PARTS REMOVED FOR VIEW

4. Reverse procedure to install.

## POWER SWITCH AND MOMENTARY SWITCHES

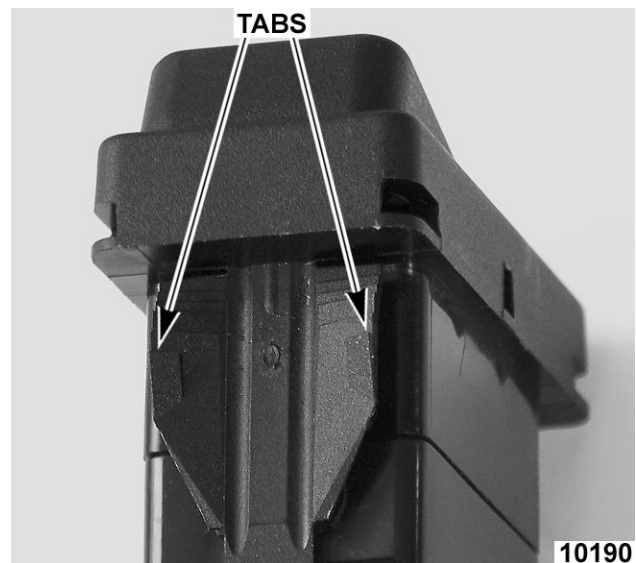


**WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

**NOTE:** Momentary switches on KA7E only.

1. Remove Right Side Cover.
2. Disconnect wires from switch.

**NOTE:** There are four tabs (two at each end) that must be depressed in order for switch to slide out of bezel.



SWITCH DISASSEMBLED FOR VIEW

3. Use recommended tools to release locking tabs at both top and bottom of switch body.

**NOTE:** Picture below shows parts not installed in oven for illustration purposes. It is recommended that you fully insert tools and gently spread tool ends apart as shown. Then gently pull switch out of bezel. Some gentle prying may be necessary to start switch out of bezel.

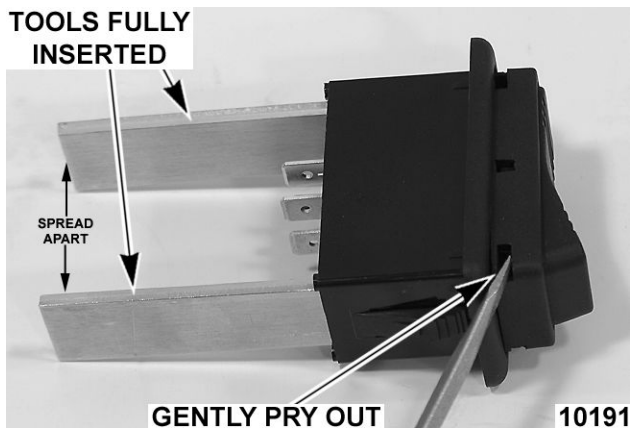


Fig. 58



Fig. 59

4. Push switch out of bezel.
5. Reverse procedure to install.

## DISPLAY BOARD AND KEYPAD



**WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

**NOTICE** Certain components in this system are subject to damage by electrostatic discharge during field repairs. A field service grounding kit is available to prevent damage. The field service grounding kit must be used anytime the control board is handled.

TSB 1381 KA7E ROTARY OVEN SCRAMBLED VFD DISPLAY.

1. Remove Right Side Cover.

2. Unplug ribbon cable from display board.
  - A. Spread retaining clips to extract plug from socket.

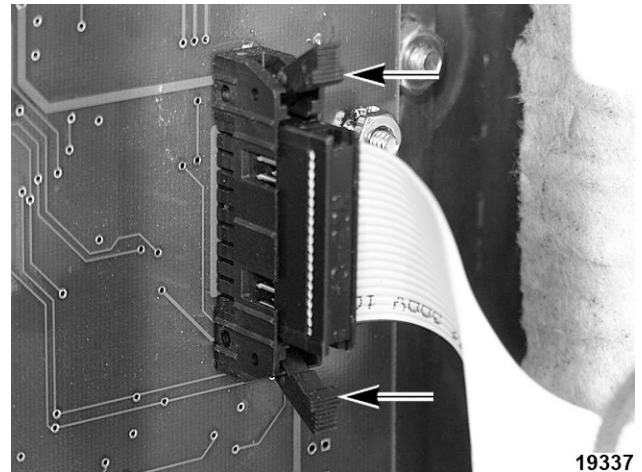


Fig. 60

3. Remove six nuts securing display panel with display board attached and lift out of oven.

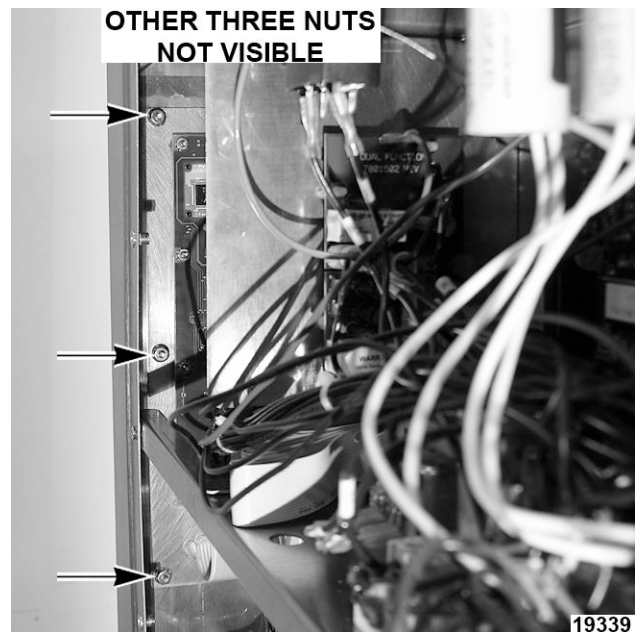


Fig. 61

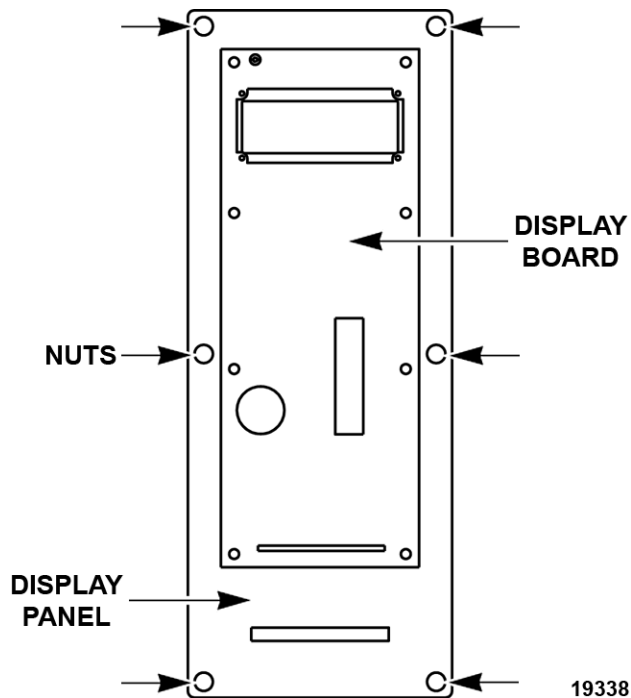


Fig. 62

4. Unplug keypad cable from display board.
5. Remove eight nuts and washers securing board to panel and lift board off studs.

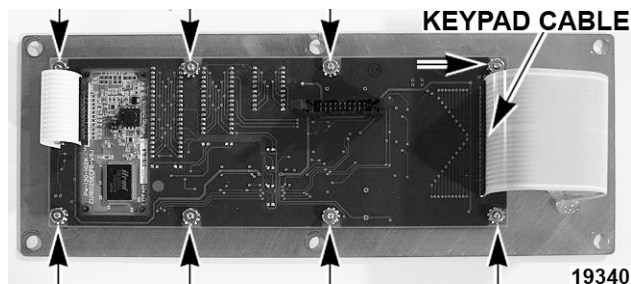


Fig. 63

6. Remove spacers from studs on display panel.

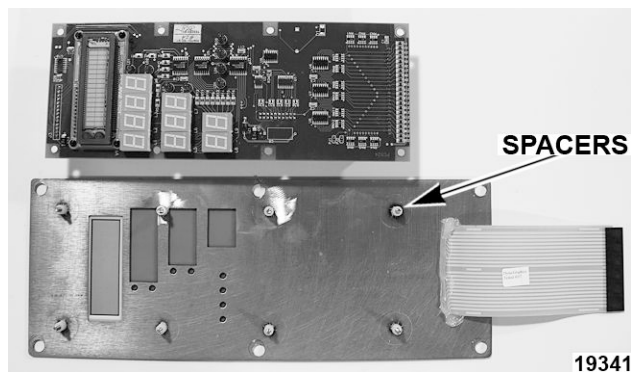


Fig. 64

7. Reverse procedure to install.

## ROTOR STOP/START SWITCH



**⚠ WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Remove Right Side Cover.
2. Unscrew black knob and remove from switch.



Fig. 65

3. Unscrew mounting nut.



Fig. 66

4. Pull switch out of hole.
5. Identify and disconnect wires.
6. Reverse procedure to install.

## MEAT PROBE MINI JACK



**⚠ WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Remove Right Side Cover.
2. Mini jack is located under power switch.

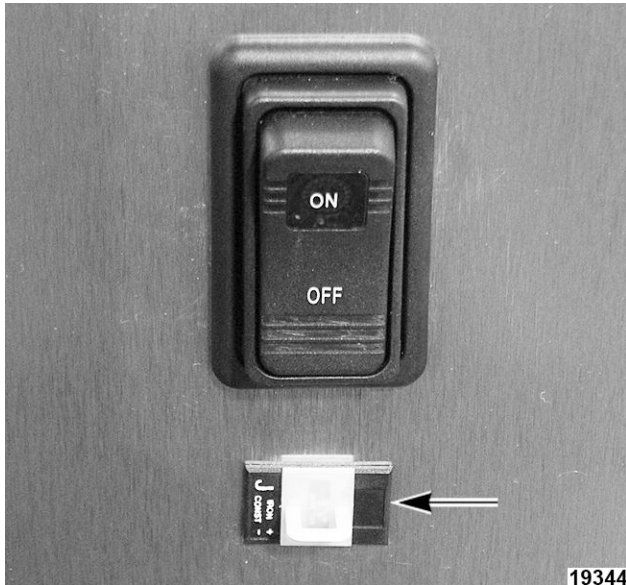


Fig. 67

3. Use a small screwdriver or similar object to carefully pry tabs out and work retainer clip off jack.

**NOTE:** Jack shown removed from oven for view. Also notice that wires are polarity sensitive and must be connected properly for correct operation.

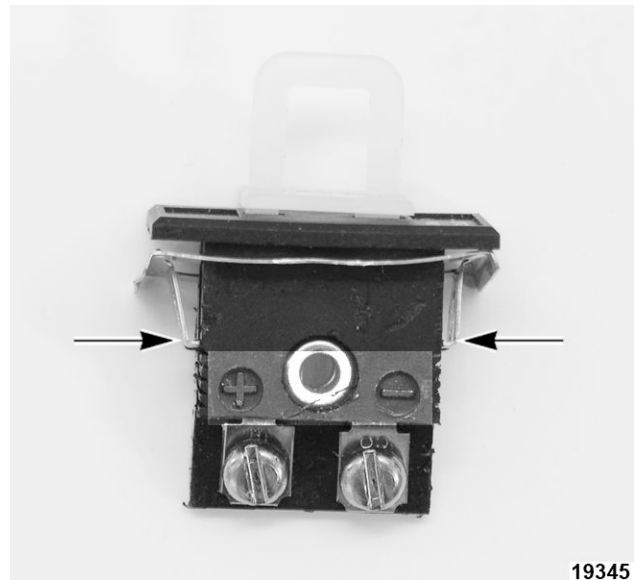


Fig. 68

4. Identify and disconnect wires from mini jack terminals.
5. Reverse procedure to install.

## CAPACITORS



**⚠ WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Remove Right Side Cover.
2. Disconnect wires from capacitor being replaced.
3. Remove hardware securing capacitor being replaced and remove capacitor.

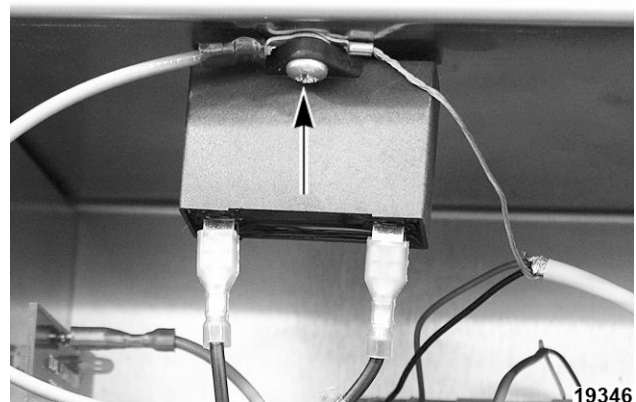


Fig. 69



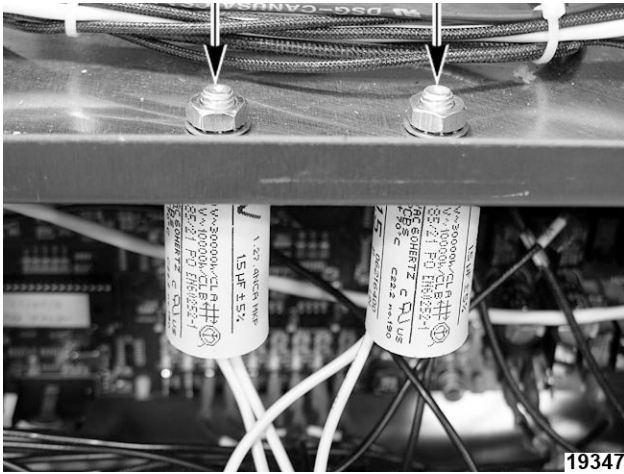


Fig. 70

4. Reverse procedure to install.

## WATER LEVEL CONTROL BOARD (KA7E ONLY)



**WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

**NOTICE** Certain components in this system are subject to damage by electrostatic discharge during field repairs. A field service grounding kit is available to prevent damage. The field service kit must be used anytime the control board is handled.

1. Remove Right Side Cover.
2. Remove four screws securing divider wall that water level control board is fastened to.

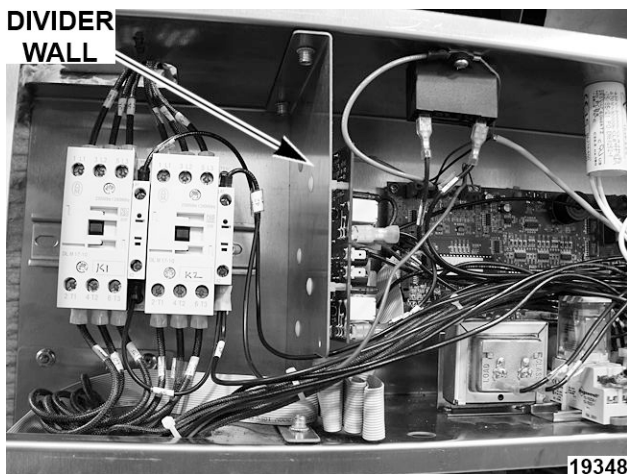


Fig. 71

3. Pivot divider wall to access water level control board.

4. Identify and disconnect wires.

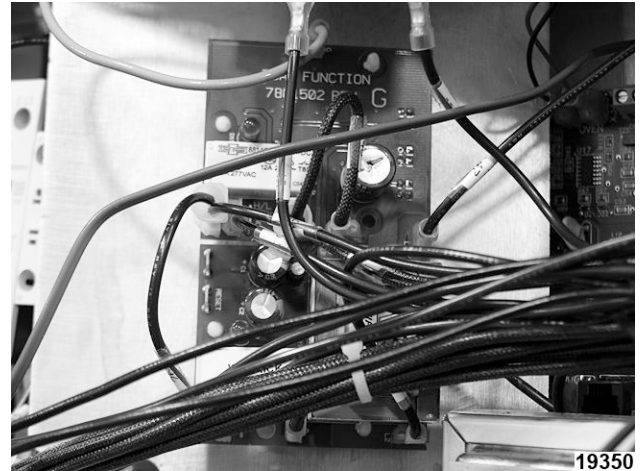


Fig. 72

5. Use needle nose pliers to squeeze tabs on five board supports. Work board off supports.

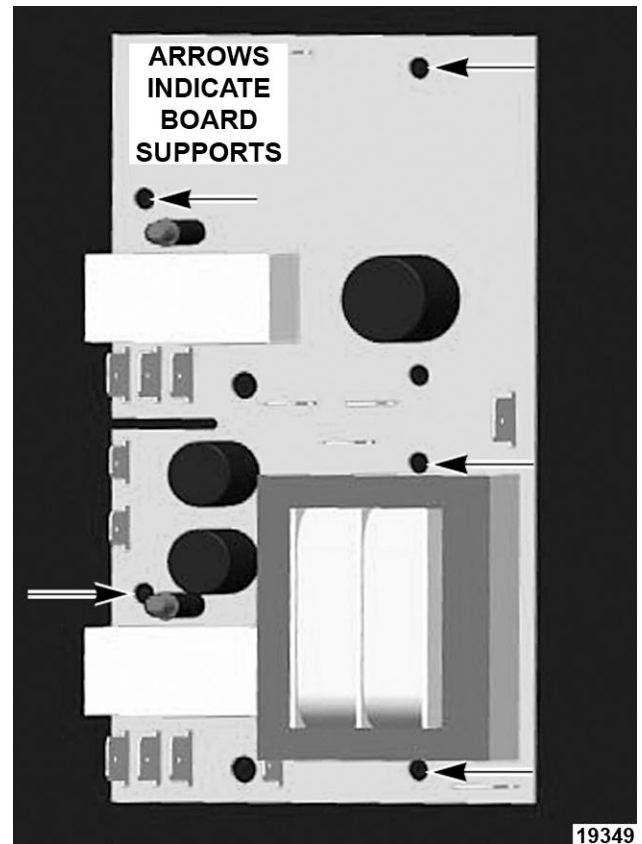


Fig. 73

6. Reverse procedure to install.

## WATER LEVEL SENSOR (KA7E ONLY)



**⚠ WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Remove Right Side Cover.
2. Remove wire attached to sensor.
3. Unscrew sensor and remove from oven.



**PARTS REMOVED FOR VIEW**

4. Reverse procedure to install.

## CHEMICAL SENSOR (KA7E ONLY)



**⚠ WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

**⚠ WARNING** Oven cleaners are corrosive and can cause chemical burns. Rubber gloves, goggles and protective clothing are required. Read and follow the instructions for the oven cleaner.

1. Remove Right Side Cover.
2. Remove wire attached to sensor.
3. Loosen hose clamps and work hoses off sensor.



**Fig. 75**

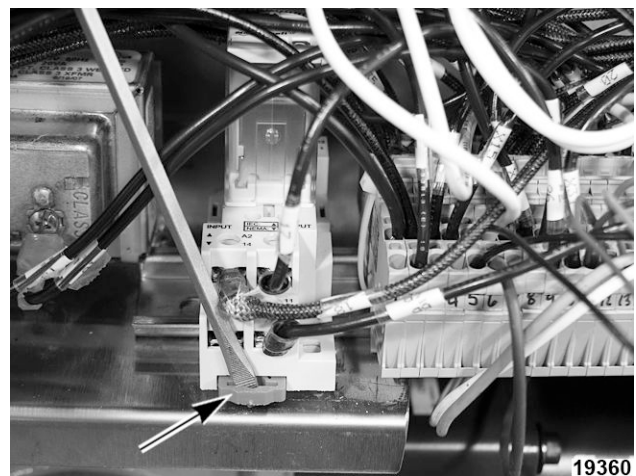
4. Reverse procedure to install.

## WASH PUMP RELAY (KA7E ONLY)



**⚠ WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Remove Right Side Cover.
2. Use small screwdriver to pry out release tab, lift front of relay and disengage rear of relay from din rail.



**Fig. 76**

3. Identify and disconnect wires.
4. Reverse procedure to install.



## TRANSFORMER



**WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Remove Right Side Cover.
2. Remove two screws and nuts securing transformer.

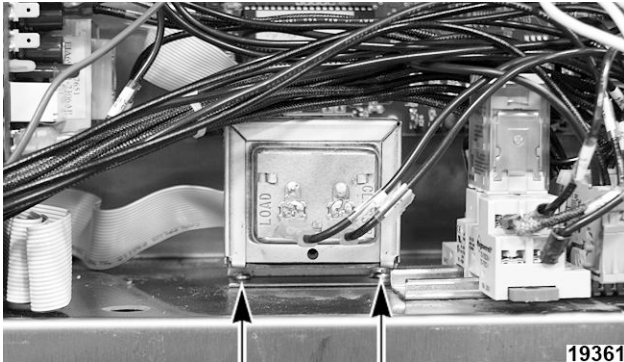


Fig. 77

3. Identify and disconnect wires to transformer.
4. Unscrew nut and remove mounting bracket.

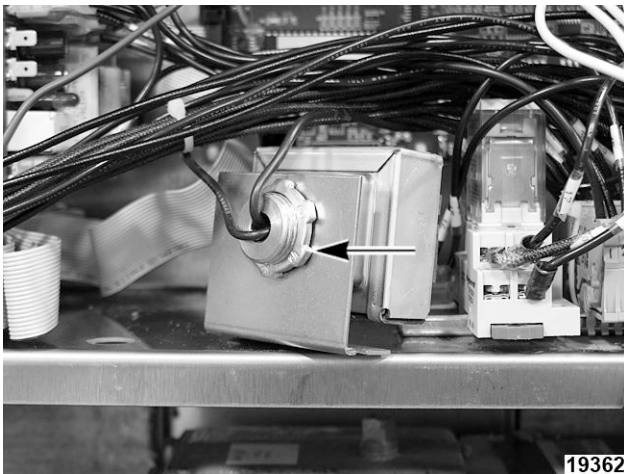


Fig. 78

5. Reverse procedure to install.

## CPU BOARD



**WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

**NOTICE** Certain components in this system are subject to damage by electrostatic discharge during field repairs. A field service grounding kit is available to prevent damage. The field service kit must be used anytime the control board is handled.

1. Remove Right Side Cover.
2. Carefully identify and disconnect all wires from CPU board.

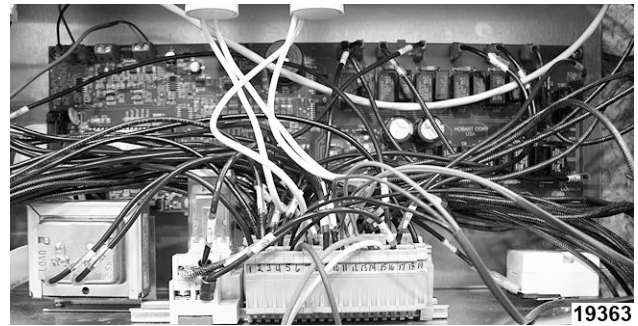


Fig. 79

3. Squeeze tabs on one support at a time and pull board off supports.

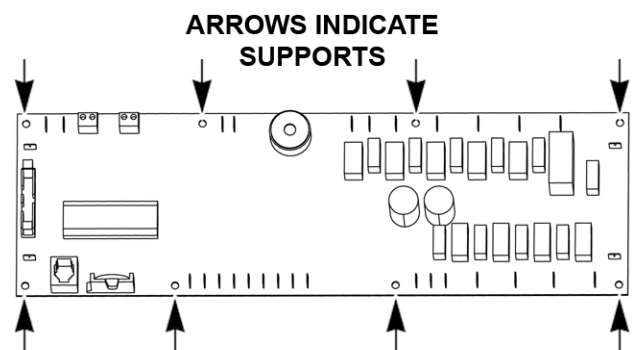


Fig. 80

4. Reverse procedure to install.

## PERISTALTIC PUMPS



**WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

**WARNING** Oven cleaners are corrosive and can cause chemical burns. Rubber gloves, goggles and protective clothing are required. Read and follow the instructions for the oven cleaner.

**NOTE:** Procedure applies to KA7E; and the KA7EM with grease assist only.

**NOTE:** KA7E rotisserie ovens previously were produced with 3 peristaltic pumps - a gray water/sump pump, grease pump, and chemical pump. The gray water/sump pump is no longer required in current production beginning with Serial No. 46300096. The pump system parameters have changed so that the main drain pump (not pictured) removes any lingering gray water from the sump. Refer to SERVICE MODE - PROGRAMMING AND DIAGNOSTICS for Programming parameters

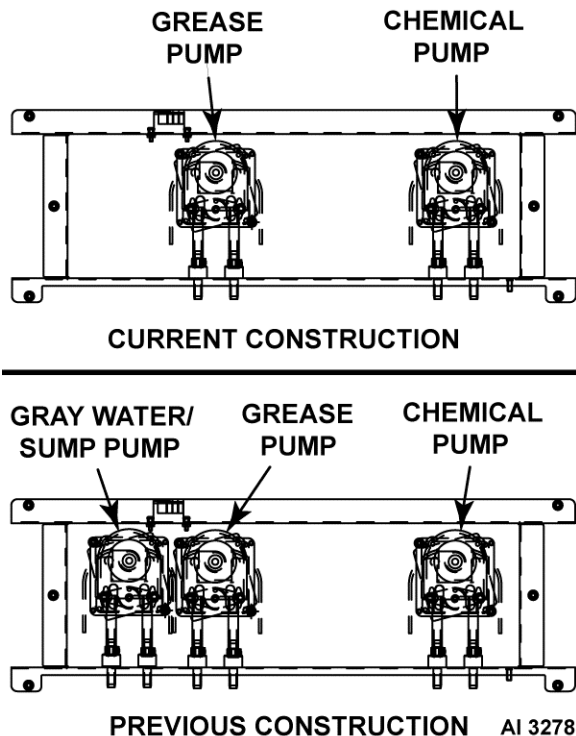


Fig. 81

TSB 1417 KA7E - CLOGGING AT INPUT AND OUTPUT OF PERISTALTIC PUMPS. See Multimedia section in TIS.

### Pump Removal

1. Remove Right Side Cover.
2. Disconnect wires for pump to be removed.
3. Disconnect hoses for pump to be removed.
4. Remove screws securing pump to frame.

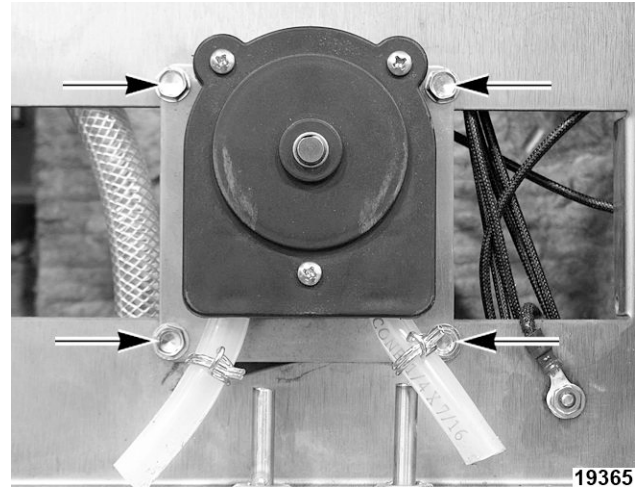


Fig. 82

5. Rotate pump slightly counterclockwise to line up with cutout in frame and withdraw pump out of frame.

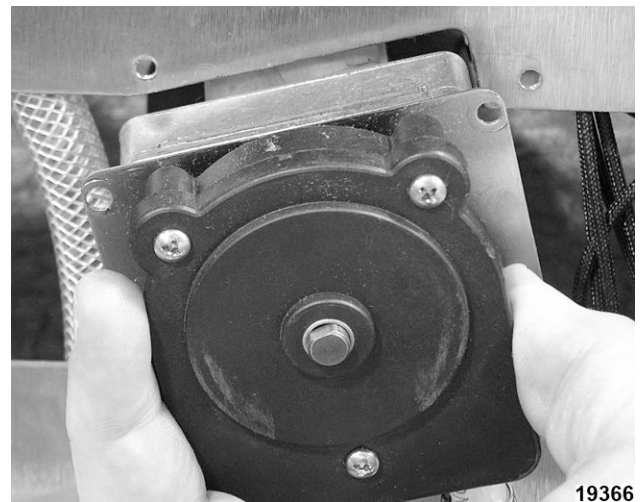


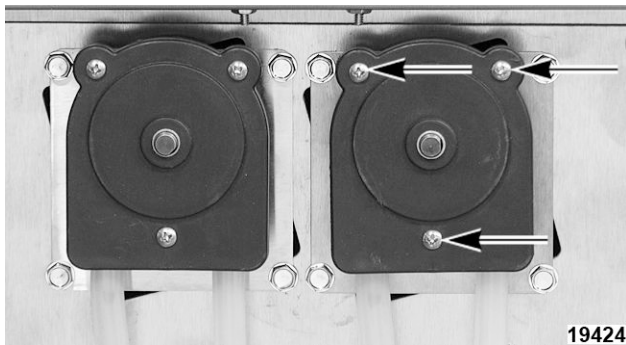
Fig. 83

6. Reverse procedure to install.

### Procedure to Replace Pump Hose

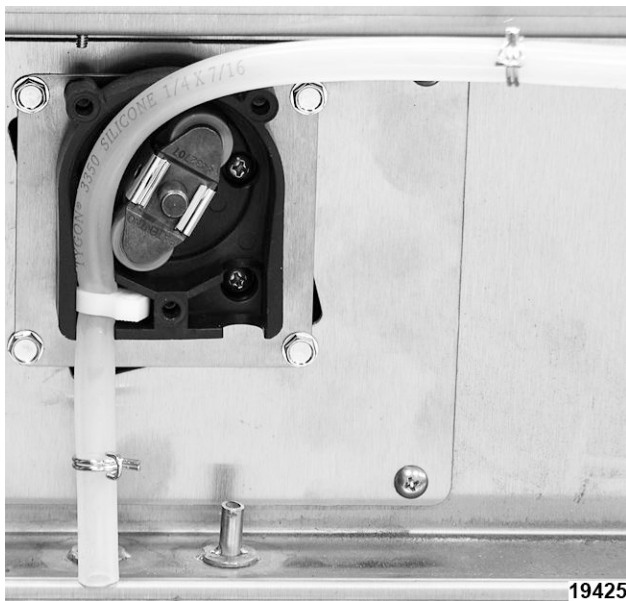
**NOTE:** Only use recommended replacement hose found in the parts catalog.

1. Remove three screws securing face plate and pull face plate off.



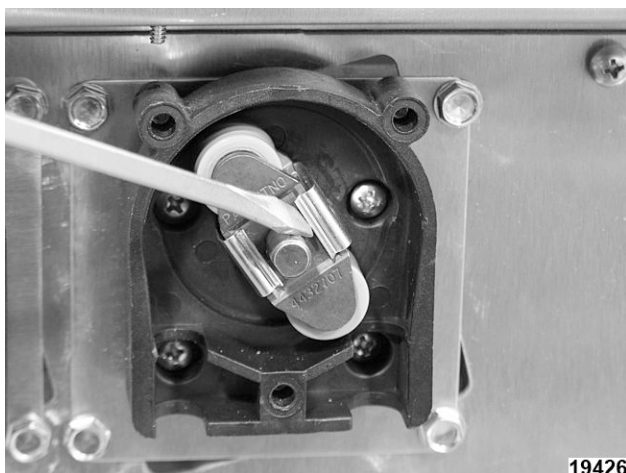
**KA7E PREVIOUS CONSTRUCTION WITH GREY WATER/SUMP PERISTALTIC SHOWN ON LEFT**

2. Disconnect hose ends and work hose out of pump.



**Fig. 85**

3. If rollers need to be removed, use a screwdriver and release both sides of retaining clamp.



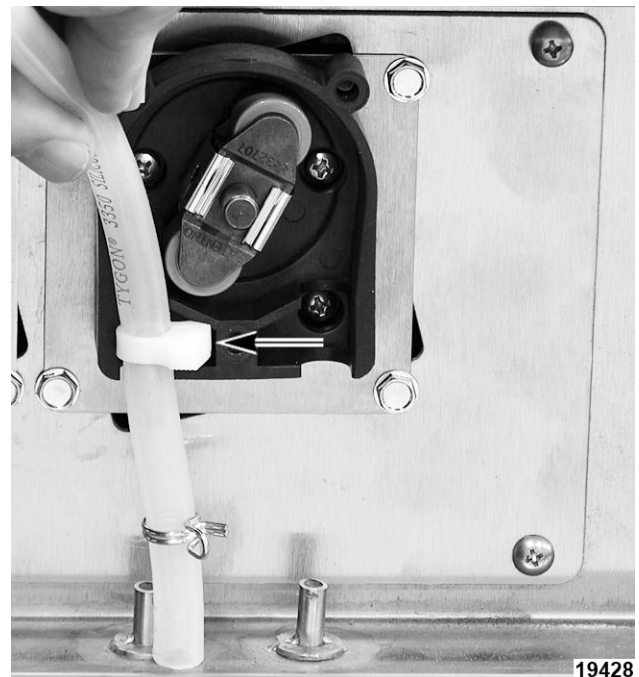
**Fig. 86**

4. Pull roller assembly off shaft.



**Fig. 87**

5. Install new hose. Work hose around cavity and manually turn rollers as hose is positioned. Make sure hose clamp is in cutout to hold hose in position.



**Fig. 88**

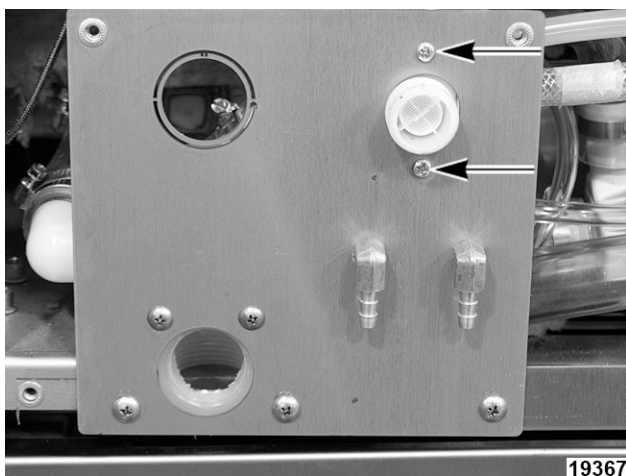
6. Install face plate.
7. Install hose clamps and connect hoses. Trim discharge hose length if needed for proper fit.
8. Complete reversing procedure to install.
9. Verify that pump is working properly as outlined under SERVICE MODE - PROGRAMMING AND DIAGNOSTICS.

## WATER FILL VALVE (KA7E ONLY)



**WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Remove Right Side Cover.
2. Shut off water supply to oven.
3. Disconnect water hose into oven water fill valve.
4. Disconnect wires to water fill valve.
5. Remove screws securing water valve to utility plate.



**KA7E - CURRENT CONSTRUCTION**

6. Disconnect hose connected to outlet of water valve.
7. Reverse procedure to install.

## WASH PUMP (KA7E ONLY)



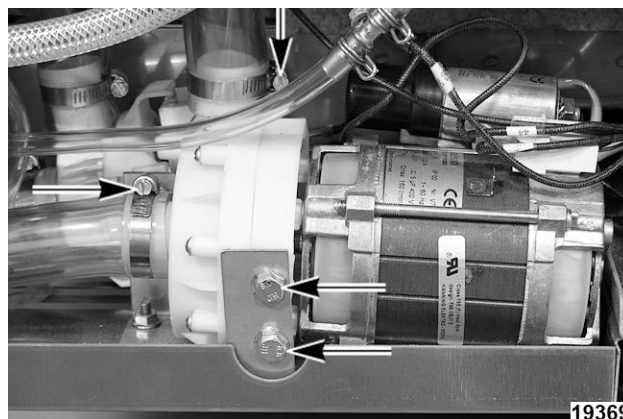
**WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Remove Right Side Cover.
2. Disconnect wires from wash pump.



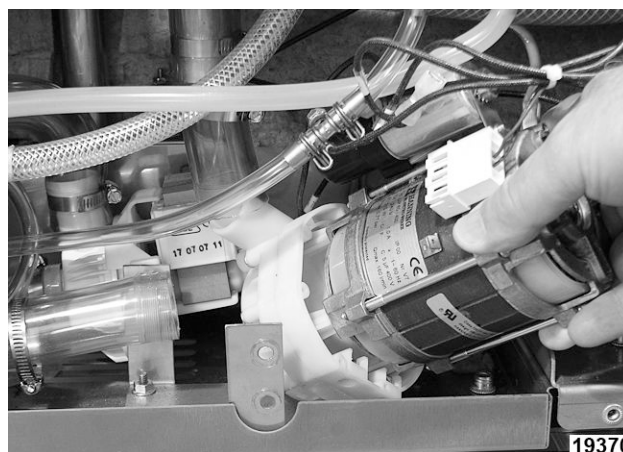
**KA7E - PREVIOUS CONSTRUCTION**

3. Remove screws securing pump to bracket.
4. Loosen both hose clamps.



**Fig. 91**

5. Pivot pump and pull out of oven.



**Fig. 92**

6. Reverse procedure to install.

## DRAIN PUMP (KA7E ONLY)



**WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Remove Right Side Cover.
2. Remove WASH PUMP (KA7E ONLY).
3. Disconnect wires from drain pump.
4. Remove screws securing pump to bracket.
5. Loosen both hose clamps.

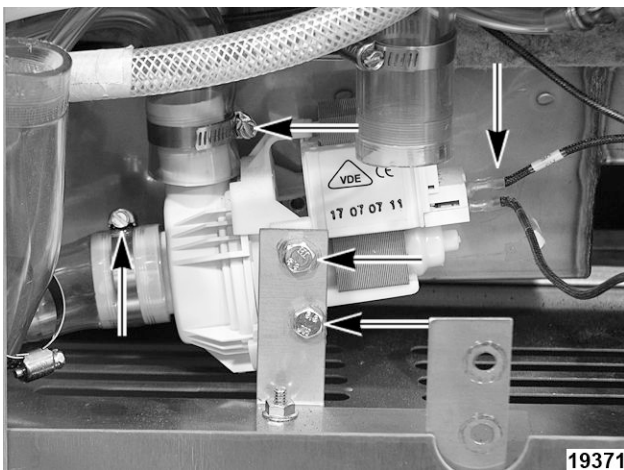


Fig. 93

6. Pivot pump and pull out of oven.

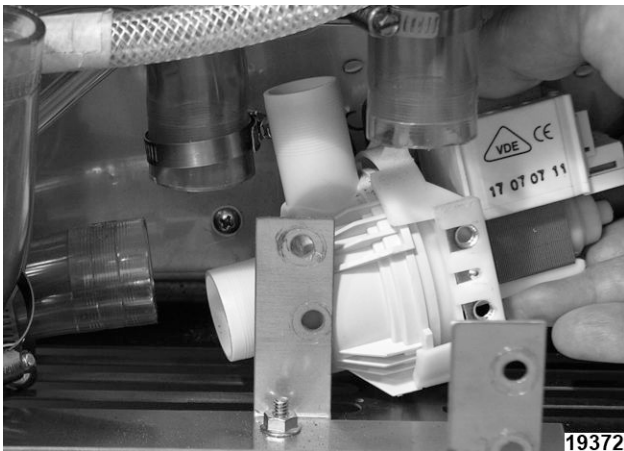


Fig. 94

7. Reverse procedure to install.

## DRIVE MOTOR ASSEMBLY



**WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

TSB1400 KA7E - LEAKS AT DRIVE ARM GASKET DURING WASH CYCLE.

TSB 1383 ROTISSERIE OVENS HR5E, HR7E AND KA7E NEW DRIVE MOTOR ASSEMBLIES. See Multimedia section in TIS.

TSI HR7E AND KA7E ROTISSERIE OVEN ROTOR CRANK ARM DISENGAGING FROM ROTOR. See Multimedia section in TIS.

1. Check that crank arm is stopped pointing to the side that has the interior light (or pointing away from motor). If it is not, apply power to unit and use the rotate switch to start and stop drive motor when crank arm is in the proper position. Then disconnect power.

**NOTE:** If there is a motor malfunction and you cannot position the crank arm, you will be able to manually put the crank arm in the proper position after you remove the motor and speed reducer. Refer to DRIVE MOTOR, SPEED REDUCER AND GEARBOX.



Fig. 95

2. Remove Right Side Cover.
3. Remove screws securing gasket bracket and gasket.

**NOTE:** Replace washers and gasket with new ones on reassembly.

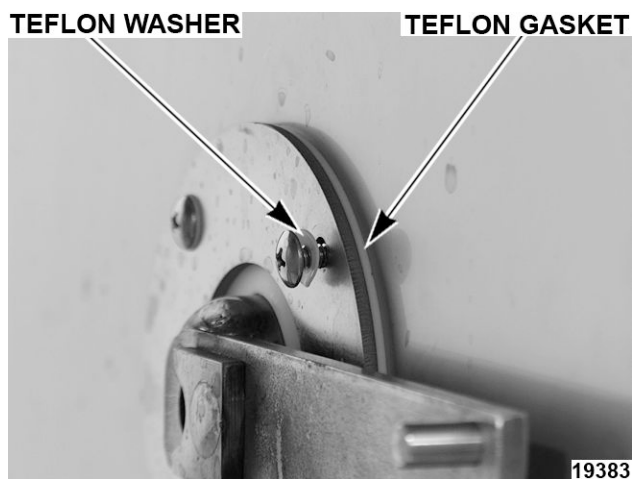


Fig. 96

**NOTE:** Gasket bracket may not be able to be removed until gear box mounting screws are removed.

4. Identify and remove motor wires from terminal block.
  - A. Insert jeweler screwdriver or similar small tool into holes to release spring tension and pull wires out.

**NOTE:** The following picture shows the terminal block disassembled to illustrate how the tool is inserted to release the wire.

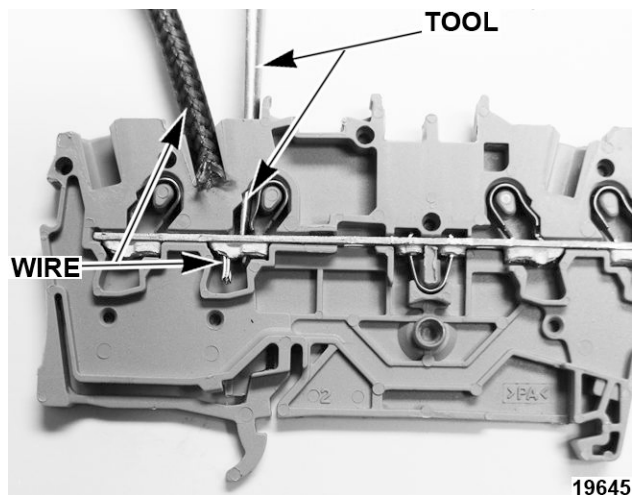
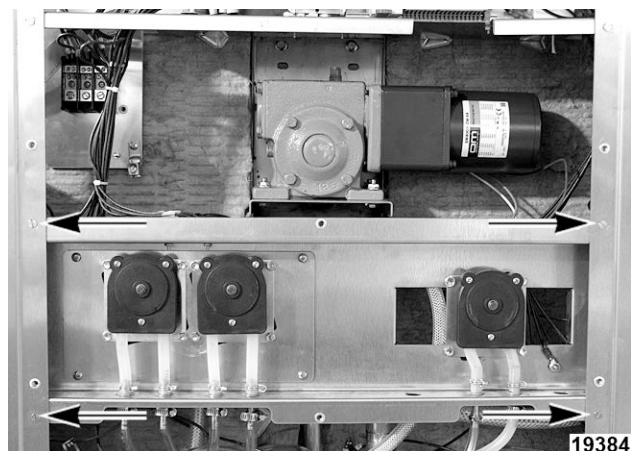


Fig. 97

5. Remove four screws securing pump mounting box and allow box to slide down for access to motor support screws.



KA7E - PREVIOUS CONSTRUCTION SHOWN

6. Remove four screws, washers and nuts securing assembly to motor support.

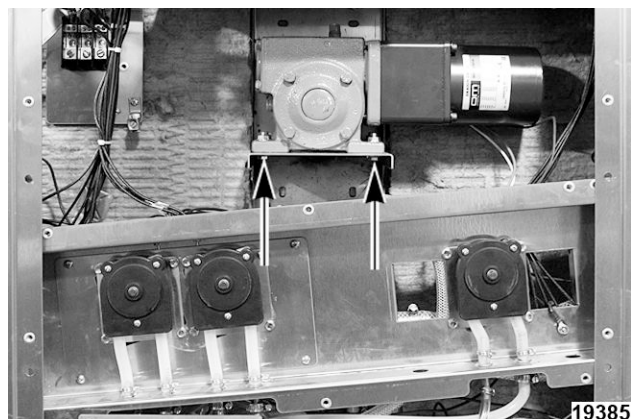


Fig. 99

7. Pivot motor away from oven and work crank arm out of hole in side wall.



Fig. 100

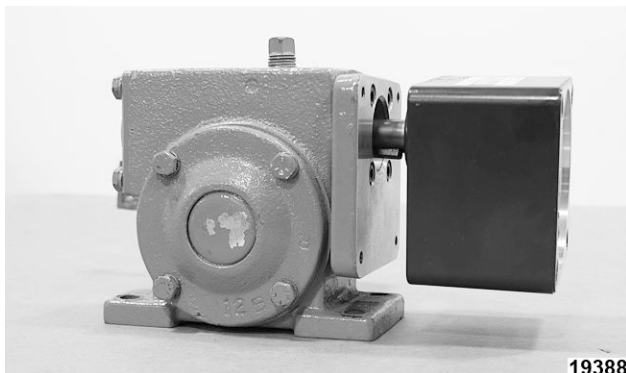
8. Remove gasket bracket and gasket if not already removed.





**Fig. 101**

9. If replacing any individual piece, remove four screws securing motor and speed reducer to gearbox. Torque screws to 22 inch lbs. on reassembly.



**MOTOR ALREADY REMOVED**

10. Install in reverse order.
11. Snug but do not tighten screws securing gasket bracket at this time. Bracket and gasket must be loose during the drive motor adjustment procedure.
12. Continue to Drive Motor Adjustment.

#### Drive Motor Adjustment



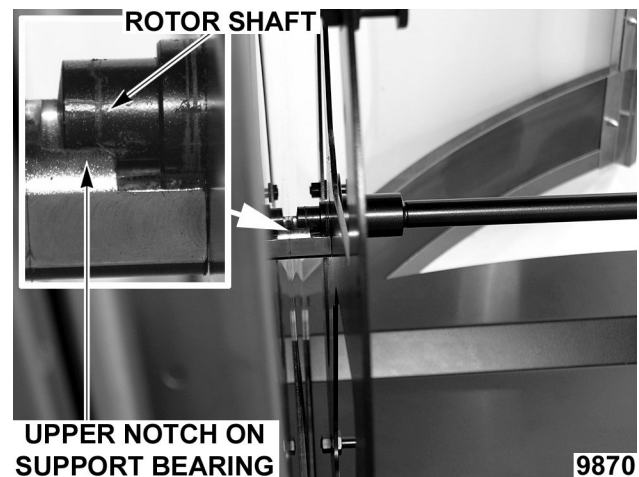
**⚠ WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

**NOTE:** Some pictures show different model oven parts. They are used for view and adjustment is identical.

1. Remove Right Side Cover.
2. Install rotor.

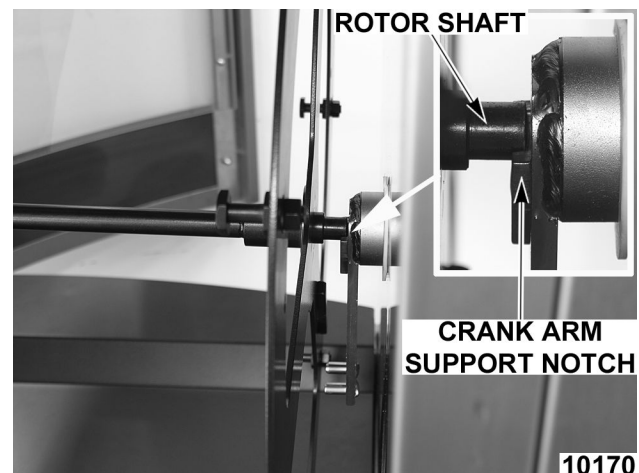
3. Place non-driven side of rotor shaft onto upper notch of support bearing.

**NOTE:** Ensure rotor is slid as far as possible on bearing support toward non-drive side.



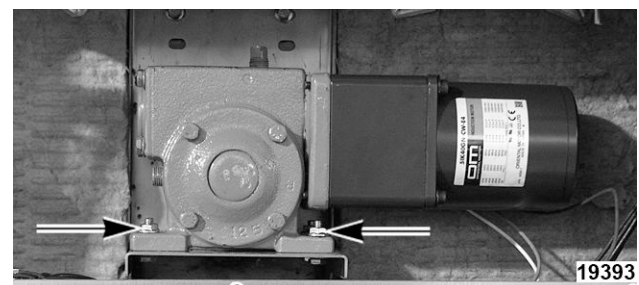
**Fig. 103**

4. Place drive end of rotor shaft on crank arm support notch.



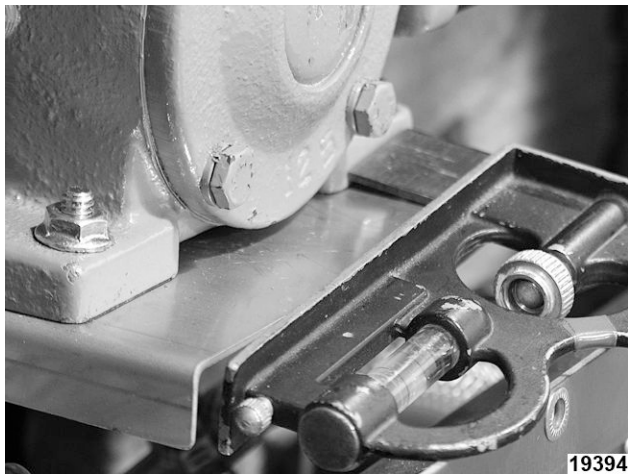
**Fig. 104**

5. Loosen screws securing rotor drive motor to support bracket.



**Fig. 105**

6. Use a square or similar tool to make gearbox square to motor support.

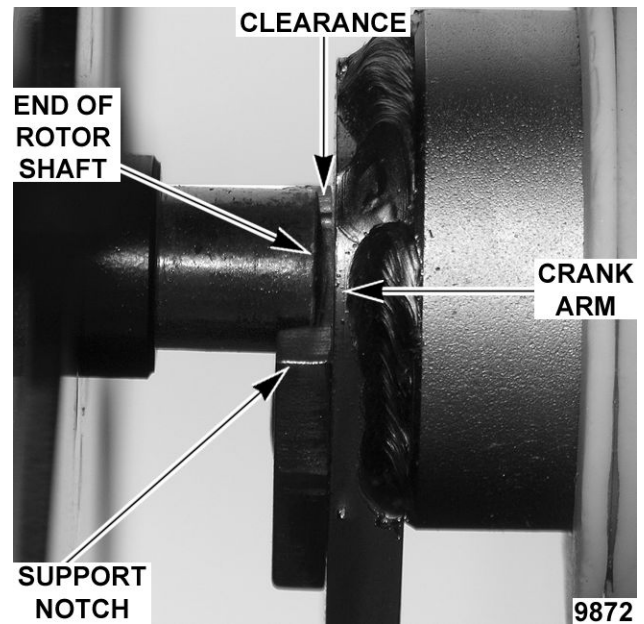


**Fig. 106**



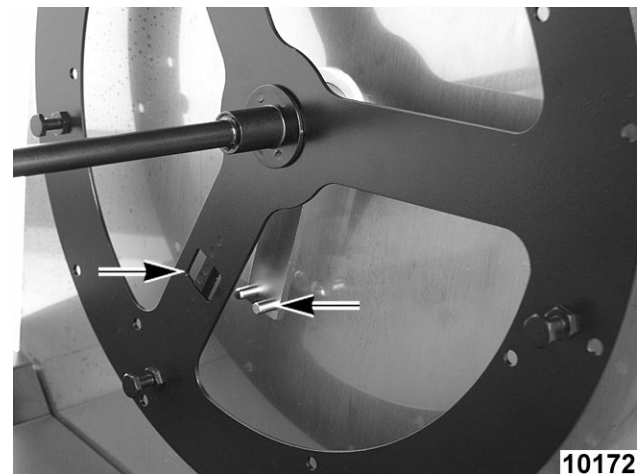
**Fig. 107**

7. Slide gearbox in or out, while keeping it square to motor support, until there is sufficient clearance for rotor shaft to be lifted off and on the support notch without the end of shaft contacting crank arm.



**Fig. 108**

8. Rotate rotor to align crank arm pins with slots on rotor.



**Fig. 109**

9. Slide rotor toward crank arm to engage pins.



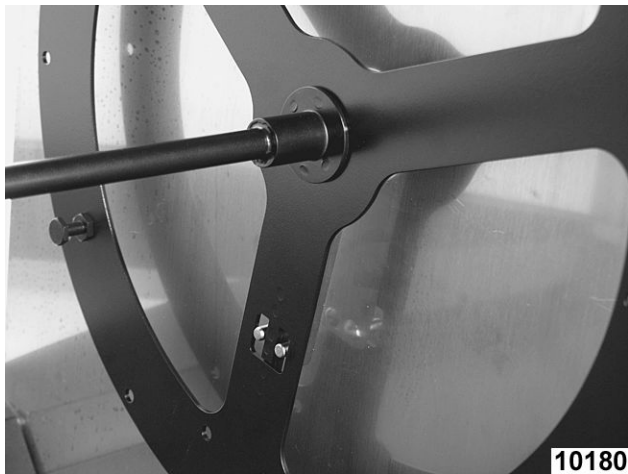


Fig. 110

10. Apply power to oven and carefully jog motor to place crank pointing toward side with interior light. Ensure crank arm is parallel with oven wall. Position motor as necessary while maintaining adjustment in previous step.
11. Jog motor to point crank arm to opposite side of oven. Ensure crank arm is parallel with oven wall. Position motor as necessary while maintaining adjustment in previous steps.
12. Repeat steps 6 thru 11 as necessary until conditions are met.
13. Jog motor to put crank arm pointing down.
14. Disconnect power to oven.
15. Tighten gear case mounting screws.

**NOTE:** Non-drive end rotor shaft should seat itself in lower notch of support bearing. This is normal operating position.

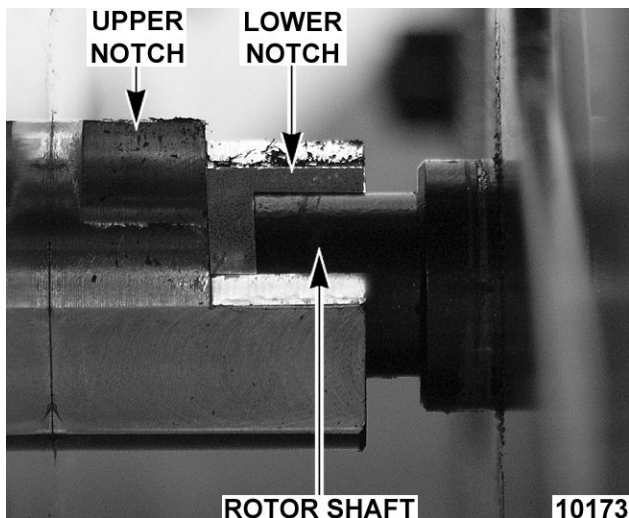


Fig. 111

16. Lift rotor out of oven.

17. Check for proper removal and installation of rotor.
18. Tighten gasket bracket screws.
19. Continue reassembly and check oven for proper operation.

## DRIVE MOTOR, SPEED REDUCER AND GEARBOX



**⚠ WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

1. Remove the rotor.
2. Remove Right Side Cover.
3. Identify and remove motor wires from terminal block.
  - A. Insert jeweler screwdriver or similar small tool into holes to release spring tension and pull wires out.

**NOTE:** The following picture shows the terminal block disassembled to illustrate how the tool is inserted to release the wire.

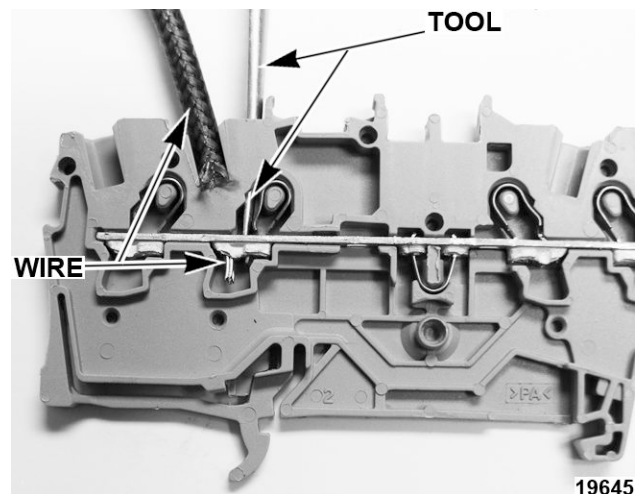
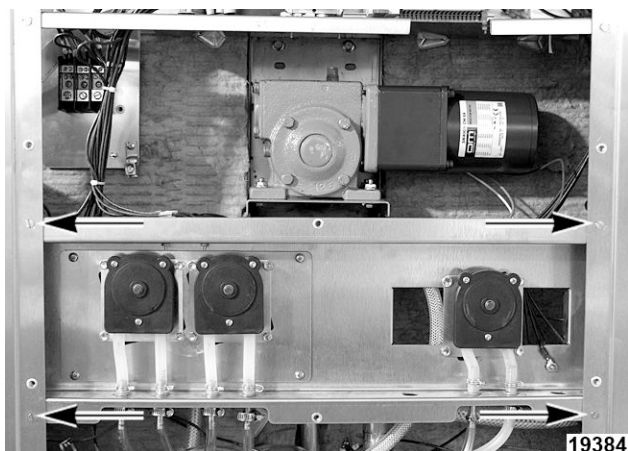


Fig. 112

4. Remove four screws securing pump mounting box and allow box to slide down for access to motor screws.



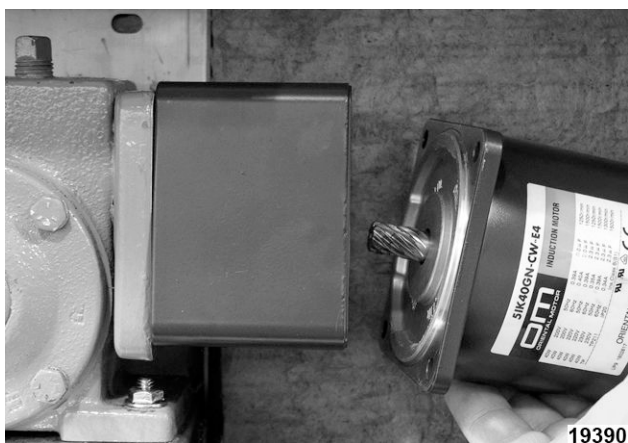
**KA7E - PREVIOUS CONSTRUCTION SHOWN**

5. Remove four screws securing motor and speed reducer to gearbox. Torque screws to 22 inch lbs. on reassembly.



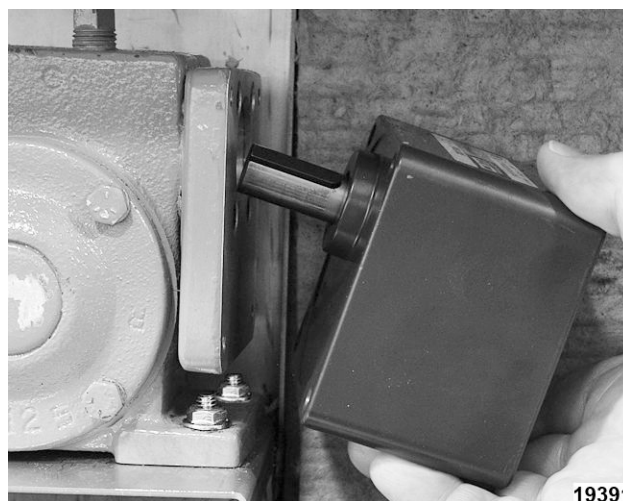
**Fig. 114**

6. Pull motor away from speed reducer and lay it aside.



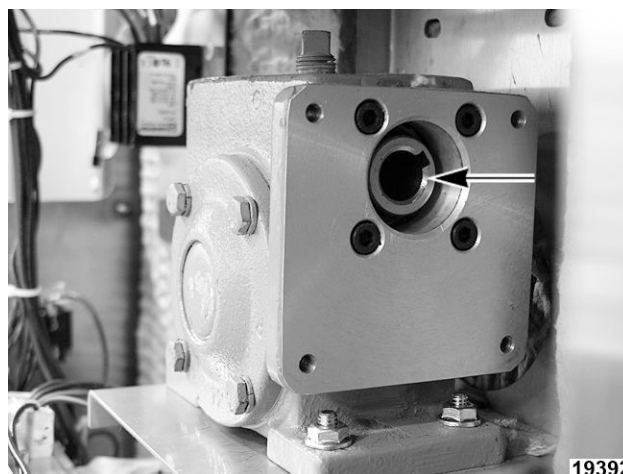
**Fig. 115**

7. Pull speed reducer away from gearbox and lay it aside.



**Fig. 116**

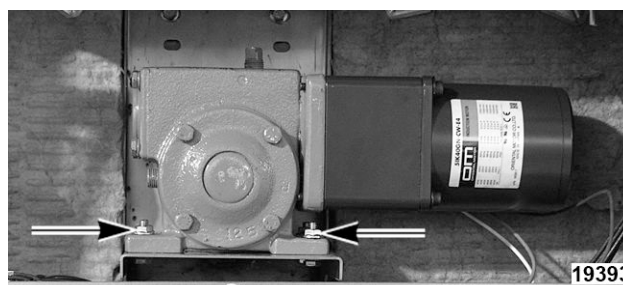
8. To remove gearbox, manually rotate worm gear to position crank arm to point toward the side with the interior light (or away from the motor).



**Fig. 117**

9. Remove screws securing gasket bracket and gasket.

**NOTE:** Replace washers and gasket with new ones on reassembly.



**Fig. 118**

**NOTE:** Gasket bracket may not be able to be removed until gear box mounting screws are removed.

10. Remove four screws, washers and nuts securing gearbox to motor support.
11. Pivot gearbox away from oven and work crank arm out of hole in side wall.
12. Remove gasket bracket and gasket if not already removed.



**Fig. 119**

13. Install in reverse order.
14. Snug but do not tighten screws securing gasket bracket at this time. It must be loose during the drive motor adjustment procedure.
15. Continue to Drive Motor Adjustment.

# SERVICE PROCEDURES AND ADJUSTMENTS

## SERVICE MODE - PROGRAMMING AND DIAGNOSTICS

**NOTE:** Service Mode allows access to the programming parameters and diagnostic tests to check the oven settings and the electrical component functionality. Additionally, on KA7E machines a DEMO MODE can be utilized as a continuation of the diagnostic tests that allow the technician to manually step through and verify clean cycle operation without having to run an actual clean cycle.

**NOTE:** The P key is used to toggle the minus sign on and off. Use this key if a negative value must be entered. Entering an invalid number results in the time display being set to 0 and a beep-beep will sound indicating you should key in a new value.

### Procedure to Enter Service Mode

1. Turn power switch off.
2. Press and hold keys CLOCK, 7, and 8 at the same time while turning power switch on.
3. Displays shows flashing P in temperature window which indicates you are in service mode.
4. Press number key(s) to enter Parameter Number according to the chart below, then press ENTER key.
  - A. Time display will flash showing current value of the parameter.
5. Either accept this value by pressing ENTER key or key in new value and then press ENTER key to accept it.
  - A. P will flash in temperature window indicating a new parameter number can be entered.
6. To save parameter settings and exit service mode, turn the power switch to off. The unit will remember the changes. After the power is turned off, power can be disconnected from unit if necessary to complete repairs.

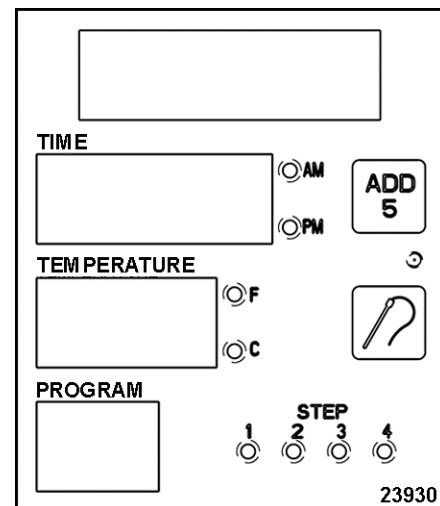
### Procedure to Toggle Between No ID and Operator ID Mode

1. Turn power switch off.

2. Press and hold keys 1, 2, and 3 at the same time while turning power switch on.
3. Display shows ID in the temperature window and ON or OFF in the time window.
4. Turn power switch off and then back on to return to operator mode.
5. Repeat steps 1 thru 4 to toggle back.

### Procedure to Toggle Between 9 and 99 Programs

1. Turn power switch off.
2. Press and hold keys PROBE, ENTER, and 2 at the same time while turning power switch on.
3. Display shows 9 or 99 in temperature window and PROG in the time window.
4. Turn power switch off and then back on to return to operator mode.
5. Repeat steps 1 thru 4 to toggle back.



**KA7E DISPLAY SHOWN**

### Service Mode Parameters

PROGRAMMING, ALL SOFTWARE VERSIONS			
Parameter Number	Description	KA7E	KA7EM
0	Time display will show software version (Read Only).	X	X

PROGRAMMING, ALL SOFTWARE VERSIONS				
Parameter Number	Description		KA7E	KA7EM
1	0 = Fahrenheit. F 0 will display in Time window. Default = 0 1 = Celsius. C 1 will display in Time window. FC will display in Program window. If the temperature display option is changed, you will see a slight pause as all stored cook programs are converted to new units.		X	X
2	0 = AM/PM. AP 0 will display in Time window. Default = 0 1 = 24 hour clock. 24 1 will display in Time window. CL will display in Program window.		X	X
3	Future use - To be used when connected to remote computer. 0 = ASCII serial protocol. 0 will display in Time window. Default = 0 1 = Binary serial protocol. 1 will display in Time window. SP will display in Program window.		X	X
4	Future use - To be used when connected to remote computer. Oven ID number Range = 0 to 31. The number entered will display in Time window. Default = 0 ID will display in Program window.		X	X
5	Temperature offset. Difference between sensor temperature and displayed temperature value; used to correct for the difference between sensor and cooking chamber temperature if any. Range = +30 to -30. The number entered will display in Time window. Default = 0 C or F depends on unit selected. OS will display in Program window.		X	X

**NOTE:** In the table below, an asterisk (\*) beside Parameter Number indicates a Service Only parameter that must be unlocked to verify or edit the setting as outlined in the following procedure. After the unlock code is entered, any of the Service Only parameters are viewable.

- Press 72 and select ENTER (parameter to unlock service only parameters).
- Press 1972 and select ENTER (code to unlock service only parameters) (1 beep).
- Enter desired Parameter Number containing an asterisk (\*) and verify or edit the setting as necessary.
- After all desired Parameter Numbers are checked, press 0 (zero) and select ENTER. Normal programming can continue.
- Verify the remaining Parameter numbers as necessary.

PROGRAMMING CONTINUED, CURRENT SOFTWARE VERSION C027				
Parameter Number	Setting	Description	KA7E	KA7EM
31	43	Chemical pump ON time in seconds (default = 43). Time required may vary for type of chemical used. CP will display in Program window.	X	---

PROGRAMMING CONTINUED, CURRENT SOFTWARE VERSION C027				
Parameter Number	Setting	Description	KA7E	KA7EM
*32	10	Preheat time in minutes (default = 10) PH will display in Program window.	X	X
*33	2	Main Drain pump ON time in minutes (default = 2) SP will display in Program window.	X	---
34	120	Chemical wash time in minutes (default = 120) Ct will display in Program window.	X	---
35	2	Number of rinse cycles (default = 2) nr will display in Program window.	X	---
*36	2	Rinse time in minutes (default = 2) Rt will display in Program window.	X	---
37	1	Number of pre-rinses (default = 1). nP will displayed in Program window. Increase pre-rinse number if initial fill is not hot enough.	X	---
38	0	Leave setting at 0 and advance to next program number. Ft will display in Program window.	X	---
39	0	Leave setting at 0 and advance to next program number. LC will display in Program window.	X	---
*40	5	Water fill time limit in minutes (default = 5) FL will display in Program window. Add time as necessary if water pressure is low.	X	---
*41	150	Cool down temperature in Fahrenheit (default = 150) Ct will display in Program window. Oven must cool to this temperature before next operation can start.	X	X
*42	150	Preheat temperature in Fahrenheit (default = 150) CP will display in Program window.	X	X
*43	200	Drying temperature in Fahrenheit (default = 200) Cd will display in Program window.	X	---
44	0	Demo Mode. Leave setting at 0 (zero) and continue to the next Program Number. See DEMO MODE in the next section. dE will display in Program window.	X	---
*45	15	Additional fill time in seconds (default = 10) OF will display in Program window.	X	---
48	4	Wash pump ON time during cleaning (default = 4) Pr is display in Program window.	X	---
49	4	Wash pump OFF time during cleaning (default = 4) SO will display in Program window.	X	---

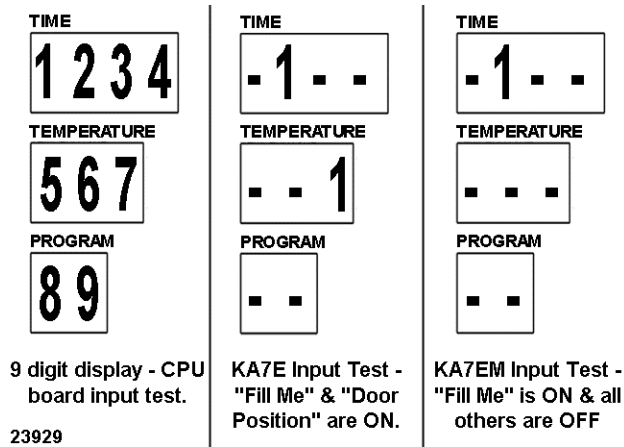
PROGRAMMING CONTINUED, CURRENT SOFTWARE VERSION C027				
Parameter Number	Setting	Description	KA7E	KA7EM
93	---	0 (zero) will display in time window as the initial value. <b>Used to set all parameters to default and clear all recipes.</b> Set value to 73 and press Enter. Machine is set to factory default settings.	X	X

PROGRAMMING CONTINUED, PREVIOUS SOFTWARE VERSION dA09				
Parameter Number	Setting	Description	KA7E	---
31	80	Chemical pump ON time in seconds (default = 80). Time required may vary for type of chemical used. CP will displayed in Program window.	X	---
34	120	Chemical wash time in minutes (default = 120) Ct will displayed in Program window.	X	---
37	2	Number of pre-rinses (default = 1). Increase if initial fill is not hot enough. nP will displayed in Program window.	X	---
48	4	Wash pump ON time during cleaning (default = 1) Pr will displayed in Program window.	X	---
49	4	Wash pump OFF time during cleaning (default = 7) SO will displayed in Program window.	X	---
93	---	0 (zero) will display in time window as the initial value. <b>Used to set all parameters to default and clear all recipes.</b> Set value to 73 and press Enter. Machine is set to factory default settings.	x	x

DIAGNOSTICS, ALL SOFTWARE VERSIONS			
Parameter Number	Description	KA7E	KA7EM
20	<b>Display Test</b> All segments and LEDs are cycled to check operation. When complete, oven will beep and be ready for the next Parameter Number entry.	X	X
21	<b>Keypad Test</b> When keys are pressed one at a time, the time display will indicate which one. When no keys are pressed, the display should be blank. If not blank, indicates a stuck key. Exit service mode by turning power switch off and then on again. Enter service mode again if necessary.	X	X
22	<b>Relay Test, components should function</b>	<b>KA7E</b>	<b>KA7EM</b>
	Press 1 - Operates CR1 "Lights" at terminal X1	X	X
	Press 2 - Operates CR2 "Fans" at terminal X2	X	X

DIAGNOSTICS, ALL SOFTWARE VERSIONS			
Parameter Number	Description	KA7E	KA7EM
	Press 3 - Operates CR3 "Rotate Motor" at terminal X3	X	X
	Press 4 - Operates CR4 "Contactor K1" at terminal X4 <b>NOTE:</b> Contactor K2 is already energized thru power switch & high limit.	X	X
	Press 5 - Operates CR5 "Sump/ Main Drain Motor" at terminal X5	X	---
	Press 6 - Operates CR6 "Wash Pump" at terminal X6 (door(s) must be closed)	X	---
	Press 7 - Operates CR7 "Chemical Pump" at terminal X7	X	---
	Press 8 - Operates CR8 "Sump Fill Valve" at terminal X8	X	---
	Press 9 - Operates CR9 "Grease drain" at terminal X9. <b>NOTE:</b> KA7EM with grease assist option only.	X	X
	Press 0 - Operates CR10 "Gray water/sump peristaltic" at terminal X10. Press ENTER to exit this test. <b>NOTE:</b> Gray water/sump peristaltic removed from ovens with Serial No. 46300096 and higher.	X	---
	<b>CPU Board Input Test, display indicates function</b>	<b>KA7E</b>	<b>KA7E</b>
	This tests for 24VAC input on X16 thru X24 to the CPU board. Uses one of the 9 digits on the front display for each of the inputs (digit 8 & 9 future use). The digits are arranged on the display in the pattern shown in the picture at the end of this section. - If an input is OFF, the digit displays a dash ( - ). - If the input is ON, the digit displays a 1. Included in the picture are display examples for the KA7E input test "Fill Me" (digit 2) and "Door Position" (digit 7). The tests show a "1" for both the inputs indicating 24VAC is present (water fill valve energized and doors closed). <b>NOTE:</b> KA7EM will always display one "1" in digit 2 position and a dash in all the other digit positions.	X	---
23	Digit 1 - Press rotate switch to test input to CPU board (X16).	X	X
	Digit 2 - Fill Me input to CPU board ( X17 ). Ground the probe to a metal surface on machine to test (approximately 3 second time delay).	X	---
	Digit 3 - Low Level Input (X18). Ground the chemical probe sensor to a metal surface on machine to test (approximately 3 second time delay).	X	---
	Digit 4 - Press stop switch at rear of machine to test input to CPU board(X19).	X	---
	Digit 5 - Press silence switch at rear of machine to test input (X20).	X	---
	Digit 6 - Press snooze switch at rear of machine to test input (X21).	X	---
	Digit 7 - Open door(s) to test. The input to CPU board is removed from (X22). Close door(s) and input is back ON.	X	---
	Digit 8 & 9 - Future Use.	X	---
	Press ENTER to exit this test.	X	---



**DIAGNOSTIC DISPLAY EXAMPLES****DEMO MODE (KA7E ONLY)**

**NOTE:** Diagnostic tests in SERVICE MODE - PROGRAMMING AND DIAGNOSTICS should be performed prior to entering DEMO MODE. The DEMO MODE is a continuation of the diagnostic tests for verifying clean cycle operation on KA7E machines. After verifying clean cycle operation, the machine must be returned to NORMAL MODE as outlined in the procedure.

**NOTE:** Remove tube from chemical cleaner bottle before starting procedure to keep excess chemical from entering machine during test.

**NOTE:** The grey water/sump peristaltic pump was removed from machines with Serial No. 46300096 and higher.

1. Enter SERVICE MODE - PROGRAMMING AND DIAGNOSTICS. Use the keypad to enter parameter numbers.

- A. Press 0 and select ENTER to verify software version.
  - B. Press ENTER to return to parameter selection screen.
2. If current software version C027, continue to step 4.
  3. If previous software version, press 72 and select ENTER (parameter to unlock service only parameters).
    - A. Press 1972 and select ENTER (code to unlock service only parameters) (1 beep).
  4. Press 44 and select ENTER (allows selection of DEMO/NORMAL Mode parameter).
  5. Press 1 and select ENTER (sets machine to DEMO MODE).
  6. Turn power switch OFF (save settings and exit service mode).
  7. Turn power switch ON. Oven is now operating in demo mode and is idle. Door should remain closed.
    - A. Press CLEAN key to enter clean mode. Disregard error messages.
    - B. Cavity light should be ON to indicate the oven is in demo mode. If light is not on, repeat procedure to enter DEMO MODE.

**NOTE:** As you press ENTER to advance through the clean cycle operation, there may be short delays before the cycle begins. You can pause the cycle at any time by pressing the rotate switch or opening the door.

Operation	VFD Display - Current Software Version (C027)	VFD Display - Previous Software Version (dA09)	Verify Functionality
8	NORMAL WASH MODE PREHEATING	CLEANING PREHEATING	<ul style="list-style-type: none"> <li>• Cavity light ON</li> <li>• Rotor turning</li> <li>• Heaters ON</li> </ul> If correct, press ENTER.
9	NORMAL WASH MODE DRAINING GREASE	CLEANING DRAINING GREASE	<ul style="list-style-type: none"> <li>• Grease pump ON</li> <li>• Rotor stops</li> <li>• Heaters OFF</li> </ul> If correct, press ENTER.
10	NORMAL WASH MODE WATER FILL	CLEANING WATER FILL	If correct, allow water to fill up to the water level probe. When water level is satisfied, it will automatically roll to the next step.

Operation	VFD Display - Current Software Version (C027)	VFD Display - Previous Software Version (dA09)	Verify Functionality
11	NORMAL WASH MODE DEGREASE #1	CLEANING DEGREASE #1	If the machine is washing (wash arm spinning), press ENTER.
12	NORMAL WASH MODE WATER DRAIN	CLEANING WATER DRAIN	If the machine is draining water, press ENTER.
13	---	CLEANING WATER DRAIN	If installed, the grey water/sump peristaltic pump should be running. If correct, press ENTER.
14	NORMAL WASH MODE WATER FILL	CLEANING WATER FILL	If correct, allow water to fill up to water level probe. When satisfied it will automatically roll to the next step.
15	NORMAL WASH MODE ADDING DETERGENT	CLEANING ADDING DETERGENT	<ul style="list-style-type: none"> <li>Chemical pump ON</li> <li>Verify pump is pulling chemical. See Clean Cycle Troubleshooting (KA7E Only) as necessary.</li> </ul> If correct, press ENTER.
16	NORMAL WASH MODE WASHING NORMAL WASH MODE SOAKING	CLEANING WASHING	<p>If the machine is washing (wash arm spinning), press ENTER.</p> <p><b>NOTE:</b> Total cycle time is 2 hrs (timer counts down). Washing/ soaking alternates every 4 min during the cycle.</p>
17	NORMAL WASH MODE WATER DRAIN	CLEANING WATER DRAIN	<ul style="list-style-type: none"> <li>Drain pump ON</li> <li>Rotor stop</li> </ul> If correct, press ENTER.
18	---	CLEANING WATER DRAIN	If installed, the grey water/sump peristaltic pump should be running. If correct, press ENTER.
19	NORMAL WASH MODE WATER FILL	CLEANING WATER FILL	If correct, allow water to fill up to water level probe. When satisfied it will automatically roll to the next step.
20	NORMAL WASH MODE RINSE #1	CLEANING RINSE #1	<ul style="list-style-type: none"> <li>Wash arm spraying</li> <li>Rotor turning</li> </ul> If correct, press ENTER.
21	NORMAL WASH MODE WATER DRAIN	CLEANING WATER DRAIN	<ul style="list-style-type: none"> <li>Drain pump ON</li> <li>Rotor stop</li> </ul> If correct, press ENTER.
22	---	CLEANING WATER DRAIN	If installed, the grey water/sump peristaltic pump should be running. If correct, press ENTER.
23	NORMAL WASH MODE WATER FILL	CLEANING WATER FILL	If correct, allow water to fill up to water level probe. When satisfied it will automatically roll to the next step.

Operation	VFD Display - Current Software Version (C027)	VFD Display - Previous Software Version (dA09)	Verify Functionality
24	NORMAL WASH MODE RINSE #2	CLEANING RINSE #2	<ul style="list-style-type: none"> <li>Wash arm spraying</li> <li>Rotor turning</li> </ul> If correct, press ENTER.
25	NORMAL WASH MODE WATER DRAIN	CLEANING WATER DRAIN	If correct, allow the water to drain completely from the machine. It will automatically roll to the next step.
26	---	CLEANING WATER DRAIN	If installed, the grey water/sump peristaltic pump should be running. Allow the pump to remove the water. It will automatically roll to the next step after 2 minutes.
27	NORMAL WASH MODE DRYING	CLEANING DRYING	<ul style="list-style-type: none"> <li>Heaters ON</li> <li>Rotor turning</li> </ul> If correct, press ENTER.
28	PRESS START OR CLEAN  CLEAN CYCLE COMPLETE  Select program 0-9	CLEAN CYCLE COMPLETE	Done. The machine will automatically exit CLEANING and go to IDLE.

### Return to Normal Mode

- Enter SERVICE MODE - PROGRAMMING AND DIAGNOSTICS. Use the keypad to enter parameter numbers.
- If current software version C027, continue to step 4.
- If previous software version dA09, press 72 and select ENTER (parameter to unlock service only parameters).
  - Press 1972 and select ENTER (code to unlock service only parameters) (1 beep).
- Press 44 and select ENTER (allows selection of DEMO/NORMAL Mode parameter).
- Press 0 and select ENTER (sets machine to NORMAL MODE).
- Turn power switch OFF (save settings and exit service mode).
- Turn power switch ON. Oven is now operating in normal mode and is idle.
  - Cavity light should be OFF to indicate the oven is in normal mode. If light is not off, repeat procedure to enter NORMAL MODE.
  - Install tube back into chemical cleaner bottle.

### TEMPERATURE SENSOR TEST



**WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

- Remove Right Side Cover.
- Remove the probe lead wires from the CPU board.
- Test the probe with an ohmmeter.

TEMPERATURE in °F	RESISTANCE ±5 OHMS
60	530
70	541
80	552
90	563
100	573
125	600
150	627
200	680
250	732
300	785

TEMPERATURE in °F	RESISTANCE $\pm 5$ OHMS
350	836
400	887
450	938

## HEATING ELEMENT TEST



**WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

MODEL	WATTAGE/ VOLTAGE	RESISTANCE*
KA7E, KA7EM	2500/208	18
	2500/240	24
	3000/208	16
	3000/240	21

\*Tolerance +5 / -10 %.

## PUMP, K3 RELAY COIL TESTS



**WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

MODEL	PUMP	RESISTANCE $\pm 5$ OHMS
KA7E	Drain	87
KA7E	Wash	32
KA7E, KA7EM*	Grease Peristaltic	14
KA7E	K3	190

\*Models with grease assist option only.

## CONTROLS CALIBRATION

### Calibration Procedure

**NOTE:** See Table 12 at the end of this procedure.

- Place temperature tester probe in the geometric center of oven cavity.
- Program a set point of 350 degrees. Allow oven temperature to cycle 3 times. Oven display temperature reading should equal the set point of 350 degrees.

- Record the **temperature tester** readout for an additional 3 cycles. It should cycle around a set point.
- Calculate the amplitude. Amplitude = (Turn Off - Turn On). An amplitude of more than 40 degrees may indicate a failed element. See heating element test.
- Calculate the average. Actual average = (Turn On + Turn Off) divided by 2. Variance (between actual average and programmed set point) of greater than 5 degrees indicates that adjustment is needed.
- To adjust:
  - Enter SERVICE MODE - PROGRAMMING AND DIAGNOSTICS, enter parameter number 5 Temperature Offset.

**NOTE:** The P key is used to toggle the minus sign on and off. Use this key if a negative value must be entered.

- If the actual average temperature is higher than the programmed set point, then enter a positive offset value of the same amount. (For example if the oven is cycling around an actual average of 360 degrees, adjust by entering an offset of +10.)
- If the actual average temperature is lower than the programmed set point, then enter a negative offset value of the same amount. (For example if the oven is cycling around an actual average of 340 degrees, adjust by entering an offset of -10.)
  - The offset can be adjusted + or - 30 deg F, but is only functional within the operating limits of the oven. Factory setting is 0.

- To save the setting, press the enter key.
- Turn the power switch to off and then on again. The oven will remember the changes.
- To recall the offset value, enter SERVICE MODE - PROGRAMMING AND DIAGNOSTICS, enter parameter number 5 Temperature Offset. Verify that the value you set is visible on the time display.

Temperature Data Recording Table		
Temperature Tester Heater Turn on	Actual Average (Turn On + Turn Off) divide by 2	Temperature Tester Heater Turn off
_____	_____	_____
_____	_____	_____
_____	_____	_____

# ELECTRICAL OPERATION

## COMPONENT FUNCTION

<b>Power Switch</b> . . . . .	Controls power to control circuits.
<b>High Limit Thermostat</b> . . .	Prevents oven from exceeding 482°F ±12 °F if controls malfunction.
<b>Wash Pump M1 (KA7E)</b> . . . . .	Circulates water and detergent during wash cycle.
<b>Drain Pump M2</b> . . . . .	Empties water from oven when turned on.
<b>Rotisserie Motor M3</b> . . .	Turns the rotisserie.
<b>Blower Motors M4, M5</b> . . .	Circulates air inside oven cavity.
<b>Grey Water/Sump Pump M6 (KA7E)</b> . . . . .	Empties remaining water from sump area. Removed from ovens with Serial No. 46300096 and higher
<b>Grease Pump M7</b> . . . . .	Empties grease accumulated in sump prior to wash cycle. KA7EM models with grease assist only.
<b>Chemical Pump M8 (KA7E)</b> . . . . .	Dispenses predetermined amount of detergent for wash cycle.
<b>Water Fill Valve S1 (KA7E)</b> . . . . .	Is turned on to fill oven with fresh water for wash and rinse cycles.
<b>Water Level Control Board (KA7E)</b> . . . . .	Monitors input from water level sensor and chemical sensor.
<b>CPU Board</b> . . . . .	Allows input from keypad, controls oven functions.
<b>Contactor K1</b> . . . . .	Power to oven heat elements. Controlled by CPU board.
<b>Contactor K2</b> . . . . .	Supplies power to oven heat elements and controlled by power switch and by high limit thermostat.
<b>Relay K3 (KA7E)</b> . . . . .	Monitors door interlock switches and provides power to wash pump.
<b>Light (internal)</b> . . . . .	Provides light for inside oven.
<b>Temperature Sensor</b> . . .	Senses temperature of oven cavity for the CPU control.
<b>Display Board</b> . . . . .	Shows time and temperature; also contains keypad for programming CPU board.
<b>Rotisserie Motor Capacitor C1</b> . . . . .	Start capacitor for rotisserie motor.
<b>Blower Motor Capacitors C2, C3</b> . . . . .	Run capacitors for blower motors M2, M3.

## SEQUENCE OF OPERATION

Refer to Model KA7E Schematic Sheet 1 and Sheet 2 for the electrical sequence of operation. The letter "P" followed by a 2 digit number refers to the Program Item Number in SERVICE MODE - PROGRAMMING AND DIAGNOSTICS.

### Programmed Cooking

1. Conditions

- A. Oven connected to correct supply voltage and is properly grounded.
- B. Control board is powered and LED on board is flashing to indicate power is applied.

**NOTE:** Control board is powered and neutral is applied to the oven component circuitry when supply voltage is connected to the oven. The power switch controls power for the oven to operate, not power to the oven.

- C. Power switch is off.

- D. High limit thermostat is set to maximum and contacts are closed.
- E. Oven cavity is at room temperature.
- 2. Power switch is turned on.
  - A. Power switch indicator light on.
  - B. Power supplied to K2 coil thru power switch contacts and high limit thermostat contacts.
    - 1) K2 contacts close.
  - C. Display shows time and the last operated program number.
  - D. Step LEDs may be on if a program is selected.
  - E. Oven is in idle mode.
- 3. Select a saved cook program (press numbered keys 1 thru 9).
  - A. Any programmed step LEDs for the selected program are illuminated.
- 4. Press Start to run cook cycle.
  - A. Power applied to rotisserie motor (M3) thru internal relay CR3 on CPU board.
  - B. Power applied to blower motors M4 and M5 thru internal relay CR2 on CPU board.
  - C. Power applied to light thru internal relay CR1 on CPU board.
  - D. Power applied to heat element contactor K1 coil thru internal relay CR4 on CPU board and power switch contacts.
    - 1) K1 contacts close.
    - 2) Power applied to heat elements E1, E2, and E3 thru K1 closed contacts and K2 closed contacts.
  - E. Display shows the number of the program running.
  - F. Step LED for the cook step in progress will blink.
  - G. Cook temperature for the cook step in progress will display.
  - H. **Total combined cook time for all steps** in the selected program will be displayed and will count down.
- 5. Temperature sensor senses oven cavity temperature.

**NOTE:** High limit thermostat must be set to maximum otherwise thermostat could regulate cavity temperature.

- 6. Cavity reaches programmed set temperature.
  - A. CPU board internal relay CR4 opens.
    - 1) Power removed from K1 contactor coil.
      - a. Power removed from heater elements E1, E2 and E3.
- 7. Oven continues to cycle until time expires and beeper sounds; or add 5 min button is pressed; or stop button is pressed.
  - A. Press beeper silence button to silence beeper.
- 8. At the end of cook cycle, all power is removed from M3, M4, M5, E1, E2, and E3.
- 9. Press Start to run the selected program again, or select a different program to run.

### **Washing Cycle Sequence of Operations**

**NOTE:** Auto clean oven's - the grease pump cycles on/off depending on the times entered in service mode.

**NOTE:** The grey water/sump peristaltic pump was removed from machines with Serial No. 46300096 and higher.

Criteria for starting wash cycle:

- 1. Power switch must be ON.
- 2. Machine must be in idle mode (not in a cooking mode).
- 3. Cavity temperature must be less than the programmed setting P41. Factory default is set at 250°F (recommended).
  - A. If the temperature is above this setting when the clean button is pressed, the unit goes into cool down mode until temp goes down to programmed setting P41 or below.
- 4. All spits and accessories are removed from interior of cavity.
- 5. No soft metals (i.e. Aluminum foil) are inside the machine.

### **User Presses CLEAN Button**

- 1. Preheat mode: Oven goes into pre-heat cooking mode with a temperature programmed set point in P42. The machine remains in preheat mode for the number of minutes programmed in P32.
- 2. Drain Grease: The grease pump comes ON for the number of minutes programmed in P30.
- 3. Pre-rinse: Factory default is 1 pre-rinse. However, multiple pre-rinses are programmable in P37.

4. Water is injected into the sump until level reaches probe. This "fill time" will then be used for all subsequent fill cycles.
5. Once water is sensed at the probe, the wash pump turns ON and rinsing begins. This normally lasts for 2 minutes. (can be programmed by P36)
6. After rinsing is complete, the drain pump turns ON for 3 minutes. (can be programmed by P33)
7. After drain pump is complete, the drain peristaltic turns ON for 3 minutes (if installed on machine).
8. Cycle now complete.
9. Wash: Now the machine is ready to wash.
10. Fill sump with water based on "fill time" determined during Pre-Rinse.
11. Chemical injected for 40 seconds. (can be reprogrammed in P31)
12. Begin washing. Wash pump ON for 4 minutes (can be reprogrammed in P48) and OFF for 4 minutes (can be reprogrammed in P49).
13. Washing lasts for 120 minutes. (can be reprogrammed in P34)
14. After washing is complete, the drain pump turns ON for 3 minutes. (can be programmed in P33)
15. After drain pump is complete, the drain peristaltic turns ON for 3 minutes (if installed on machine). (can be programmed in P33)
16. Wash cycle complete.
17. Post-rinse: The number of post-rinse cycles is factory set at 2. (can be programmed in P35)
18. Fill sump with water based on "fill time" determined by Pre-Rinse.
19. After filling with water, the wash pump turns ON and washing begins. This normally lasts for 2 minutes.
20. After rinsing is complete, the drain pump turns ON for 3 minutes.
21. After drain pump is complete, the drain peristaltic turns ON for 3 minutes (if installed on machine).
22. Cycle now complete.
23. Drying Mode: After the post rinse cycles are complete, the software enters the Drying Mode for 10 minutes.
24. The machine heats to 250°F (can be programmed by P43). If drying time is set to 0, the drying mode is skipped.
25. Cleaning is complete.

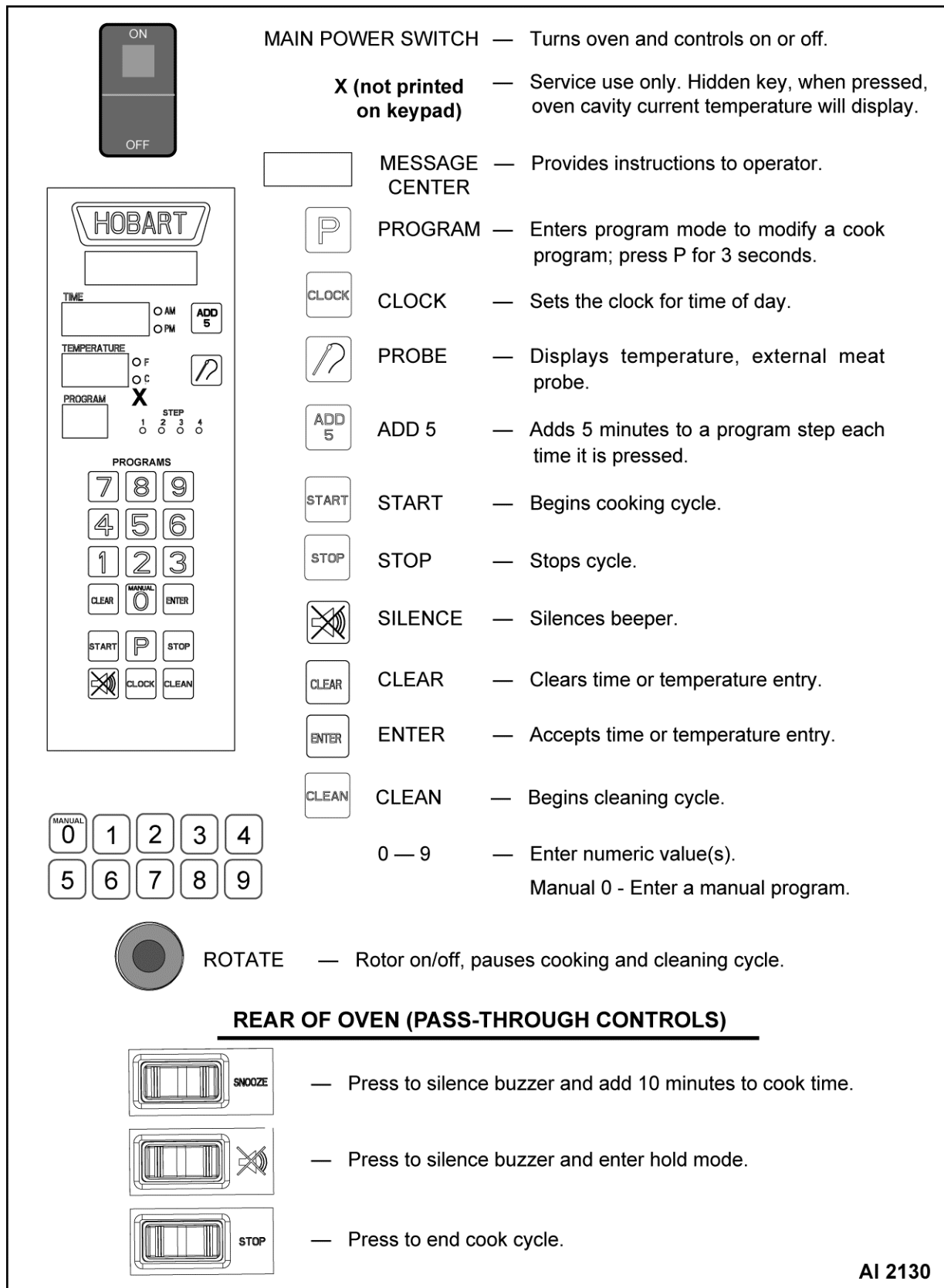
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## CONTROLS EXPLANATION

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### Model KA7E





AI 2130

Fig. 122

Model KA7EM

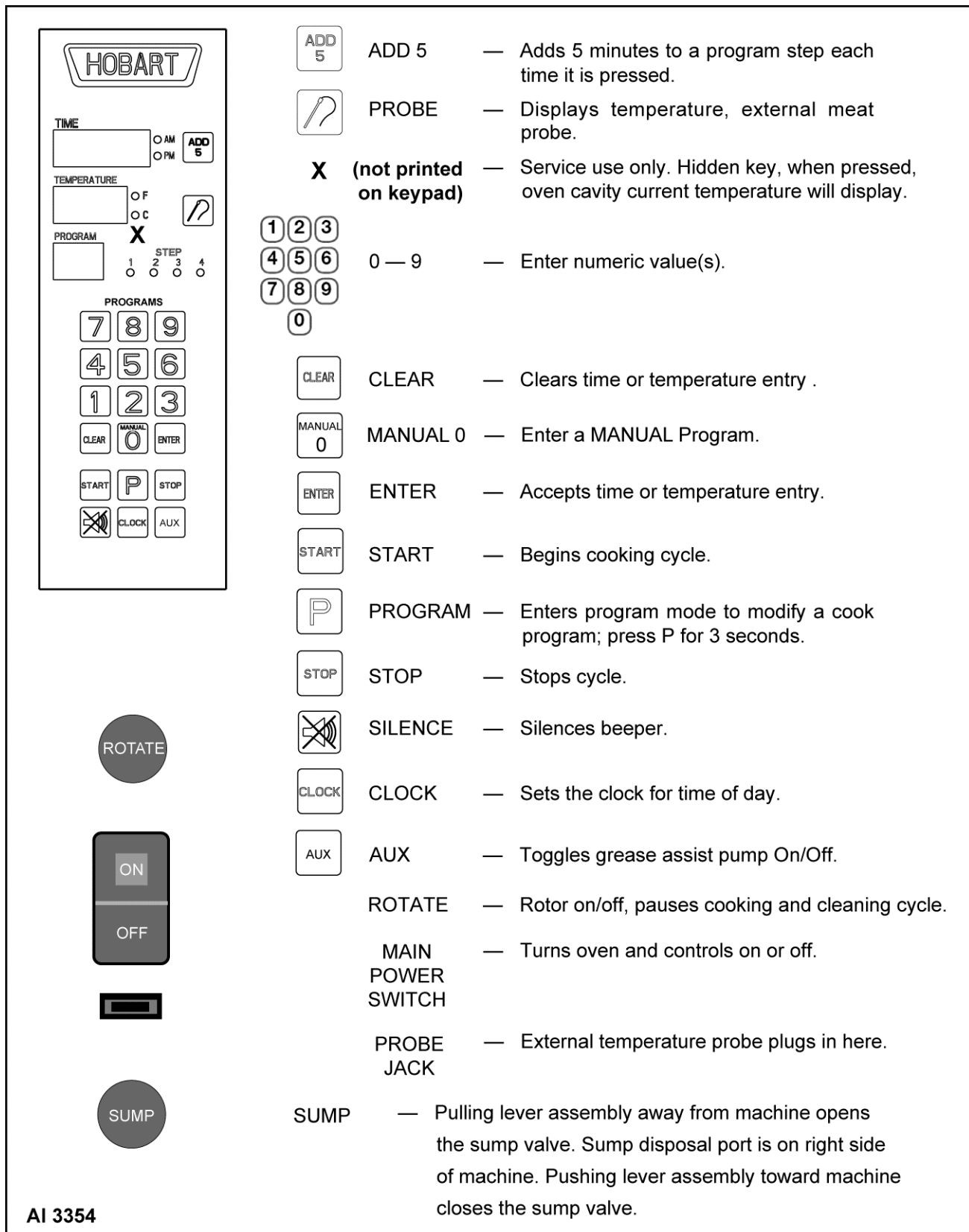


Fig. 123

## COMPONENT LOCATIONS

Model KA7E

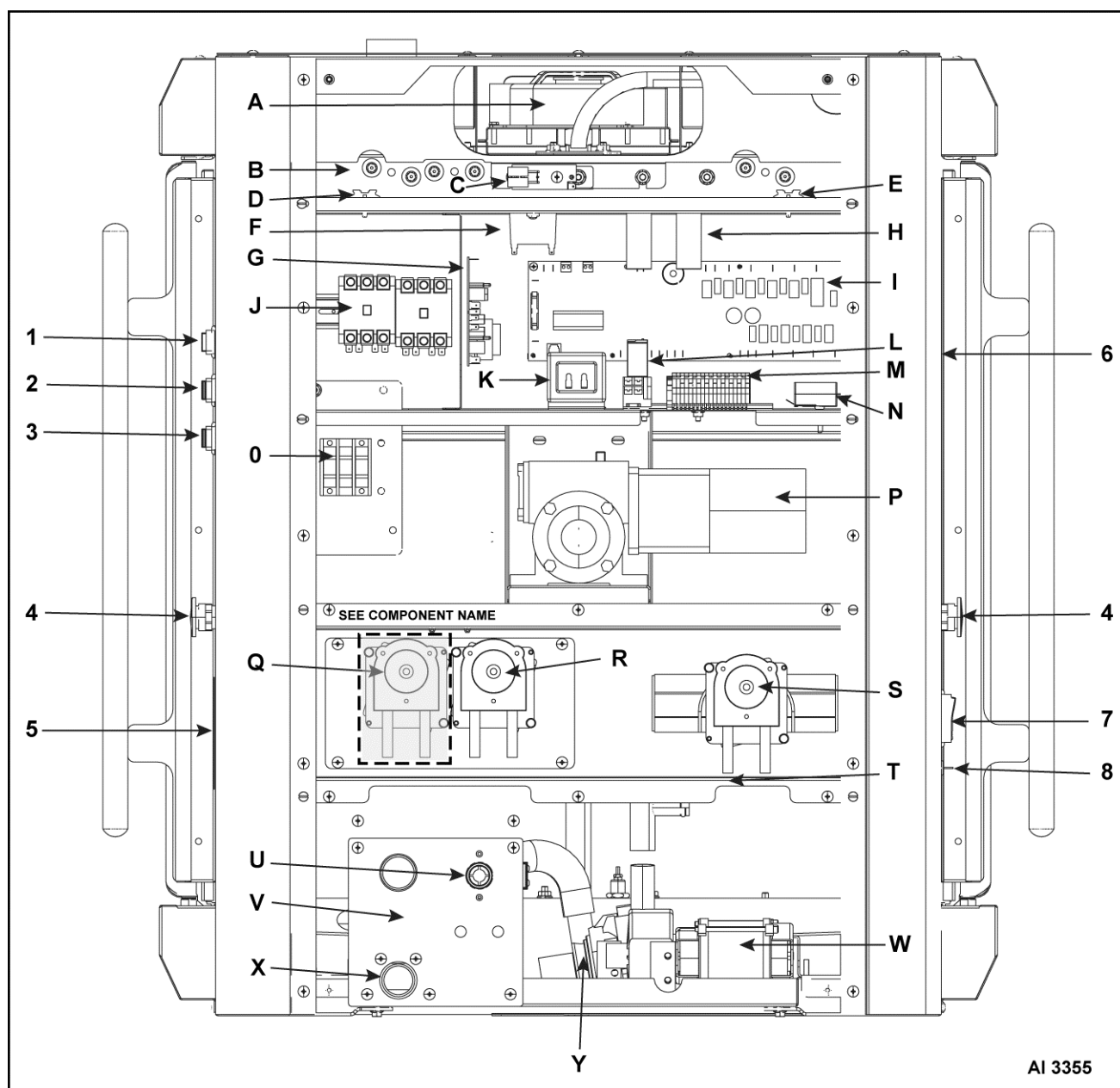


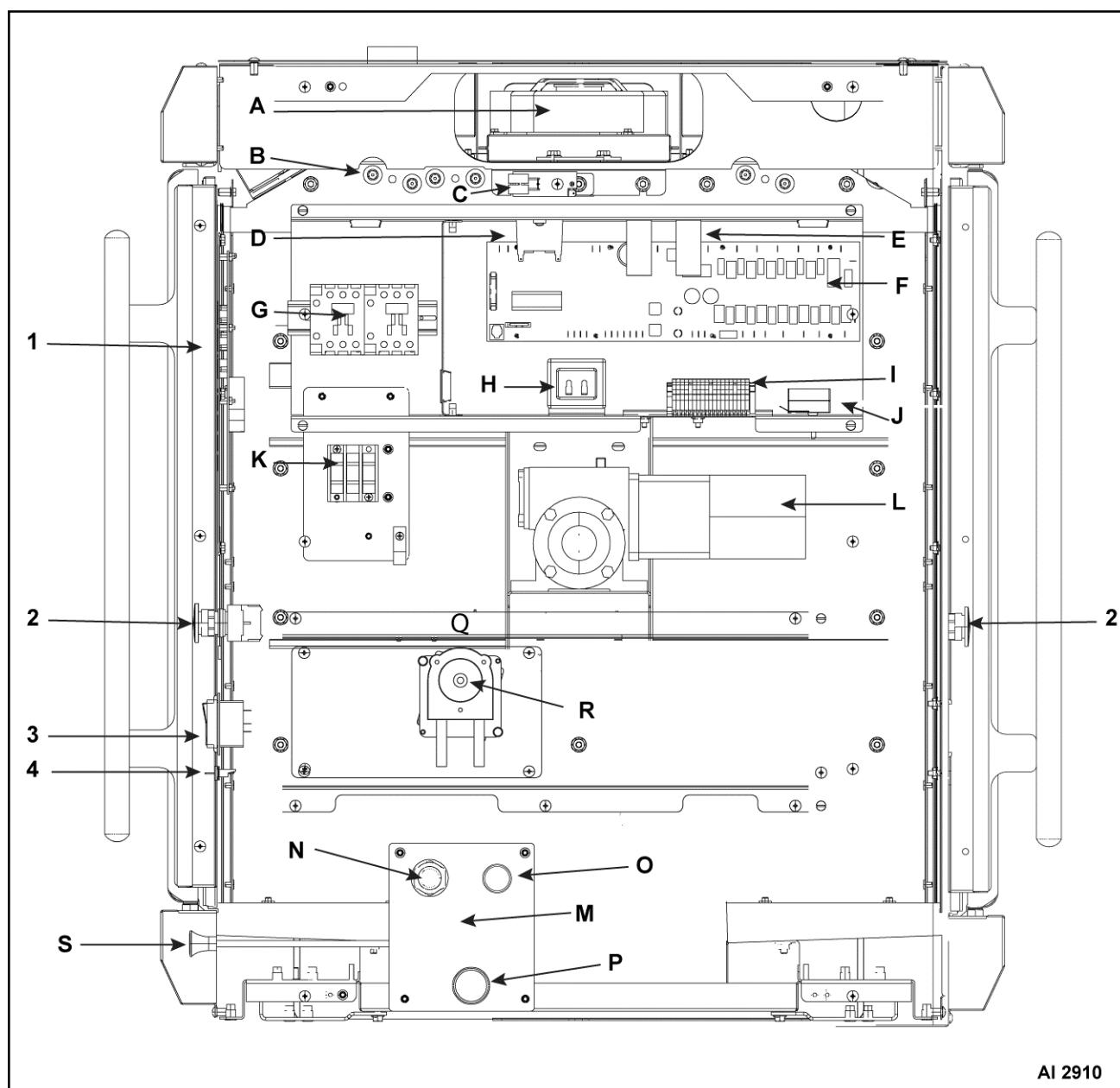
Fig. 124

**KA7E - Component Name**

<b>A</b> .....	Fan, motors and blade assembly M4 and M5
<b>B</b> .....	Heat elements (two 3000W E1 and E3, one 2500W E2)
<b>C</b> .....	Temperature sensor
<b>D</b> .....	TB3 terminal block
<b>E</b> .....	TB2 terminal block
<b>F</b> .....	Capacitor C1 for drive motor M3
<b>G</b> .....	Water level control board
<b>H</b> .....	Capacitors C2 and C3 for fan motors M4 and M5
<b>I</b> .....	CPU board
<b>J</b> .....	Heat element contactors K1 and K2

<b>K</b> .....	Transformer supplies 24V to CPU board
<b>L</b> .....	K3 door interlock relay
<b>M</b> .....	TB1 terminal strip
<b>N</b> .....	High limit thermostat
<b>O</b> .....	TB6 power in terminal block
<b>P</b> .....	Drive motor assembly M3
<b>Q</b> .....	Grey Water/Sump pump M6. Removed from ovens with Serial No. 46300096 and higher.
	<b>NOTE:</b> TB4 terminal strip located above and behind pumps.
<b>R</b> .....	Grease pump M7
<b>S</b> .....	Chemical pump M8
<b>T</b> .....	Chemical sensor (not shown)
<b>U</b> .....	Water fill S1
<b>V</b> .....	Utility plate
<b>W</b> .....	Wash pump M1
<b>X</b> .....	Drain manifold
<b>Y</b> .....	Drain pump M2
<b>1</b> .....	Snooze switch
<b>2</b> .....	Silence buzzer switch
<b>3</b> .....	Stop switch
<b>4</b> .....	Rotate switches
<b>5</b> .....	Overlay with switch instructions
<b>6</b> .....	Keypad and display board assembly
<b>7</b> .....	Power switch
<b>8</b> .....	Meat probe mini jack

**Model KA7EM**



AI 2910

Fig. 125

**KA7EM - Component Name**

- A ..... Fan, motors and blade assembly M4 and M5
- B ..... Heat elements (two 3000W E1 and E3, one 2500W E2)
- C ..... Temperature sensor
- D ..... Capacitor C1 for drive motor M3
- E ..... Capacitors C2 and C3 for fan motors M4 and M5
- F ..... CPU board
- G ..... Heat element contactors K1 and K2
- H ..... Transformer supplies 24V to CPU board
- I ..... TB1 terminal strip
- J ..... High limit thermostat

<b>K</b> .....	TB2 power in terminal block
<b>L</b> .....	Drive motor assembly M3
<b>M</b> .....	Utility plate (for grease assist option)
<b>N</b> .....	Electrical Connection (E1)
<b>O</b> .....	Grease Assist, Pumped Drain (P2)
<b>P</b> .....	Drain (main & sump) (P1)
<b>Q</b> .....	TB3 terminal strip located above and behind pump.
<b>R</b> .....	Grease Pump - Models with grease assist only.
<b>S</b> .....	Sump Drain Level, Manual
<b>1</b> .....	Keypad and display board assembly
<b>2</b> .....	Rotate switches
<b>3</b> .....	Power switch
<b>4</b> .....	Meat probe mini jack

## WIRING DIAGRAMS

### KA7E - Component Connections

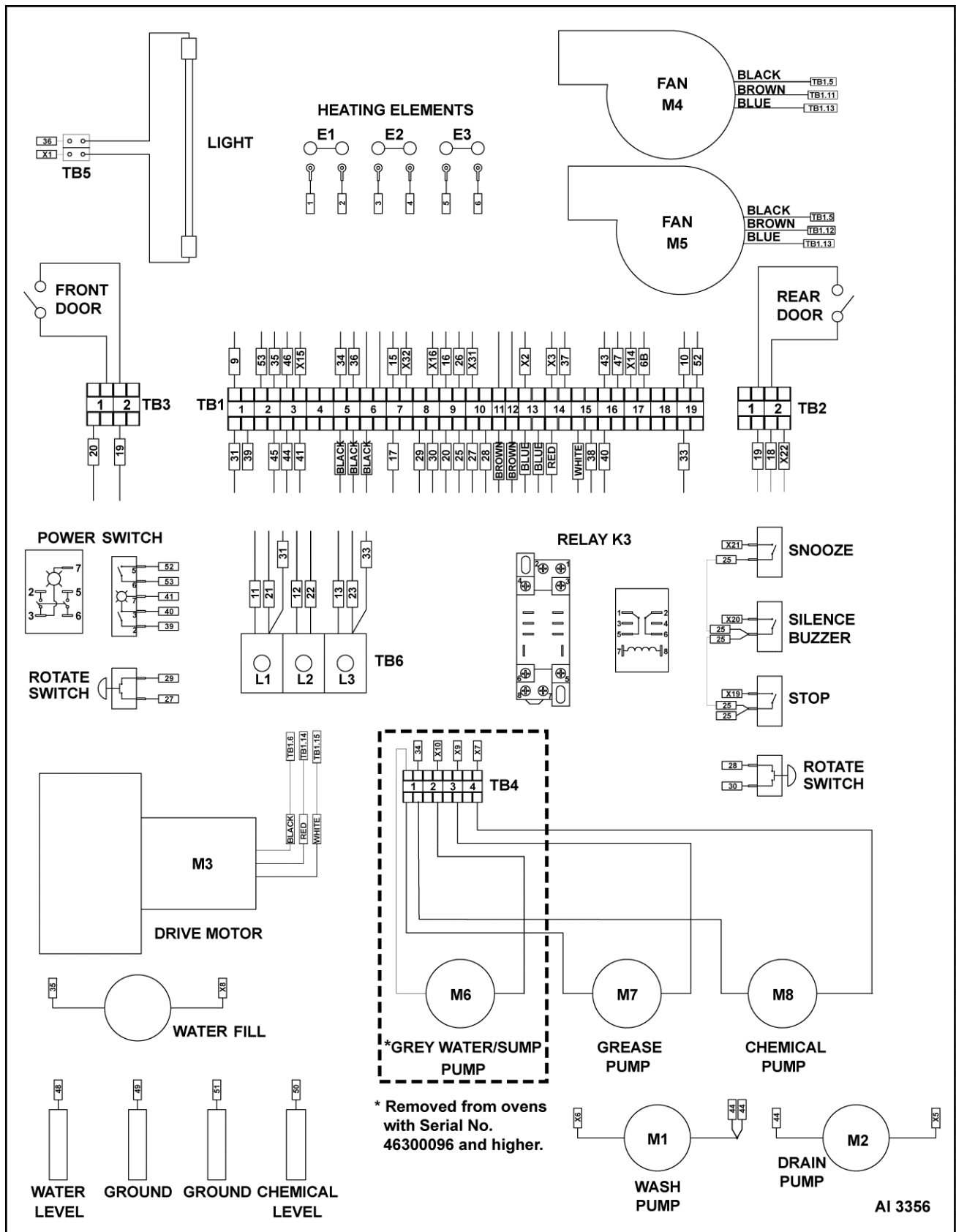


Fig. 126

## KA7EM - Component Connections

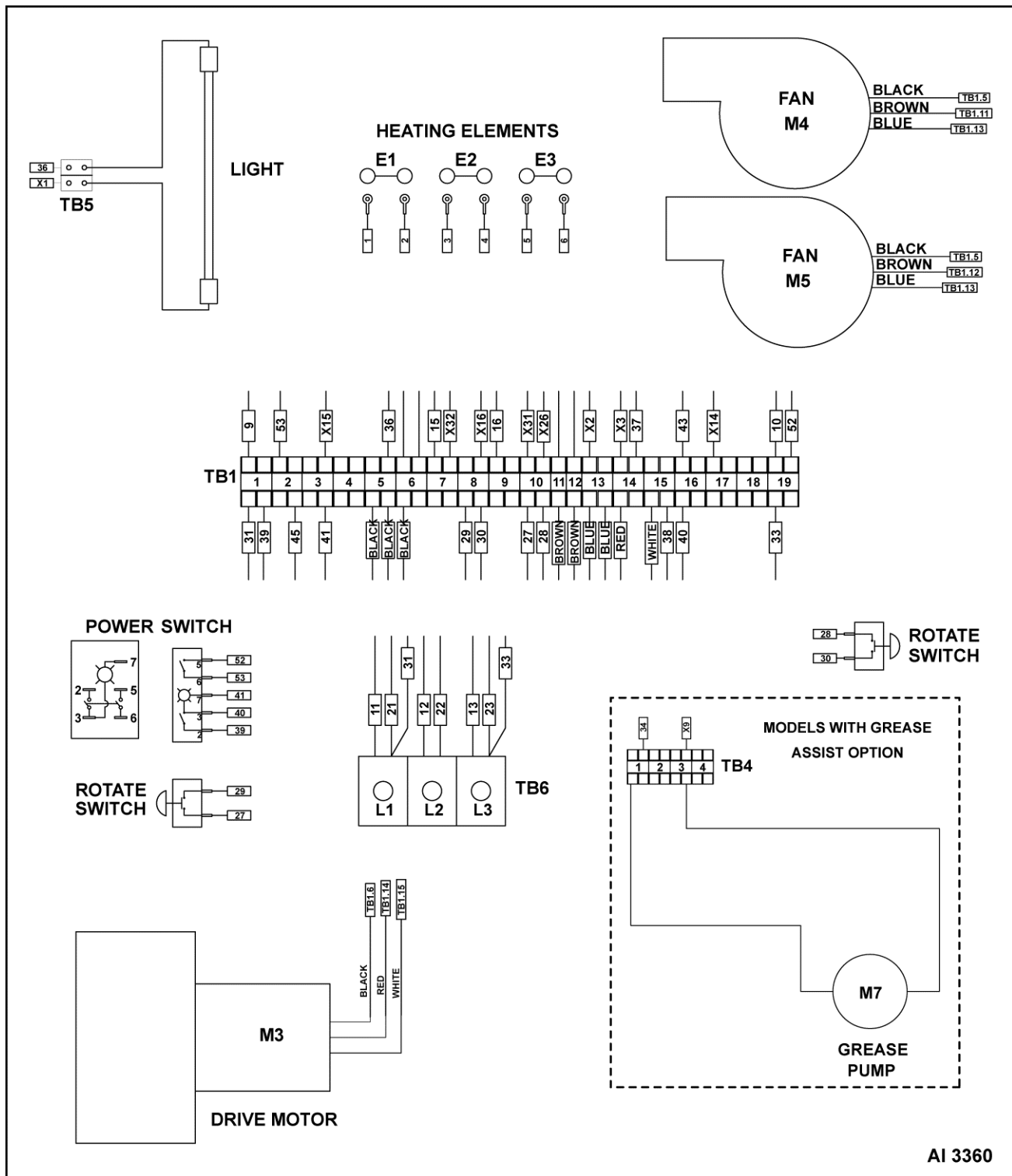
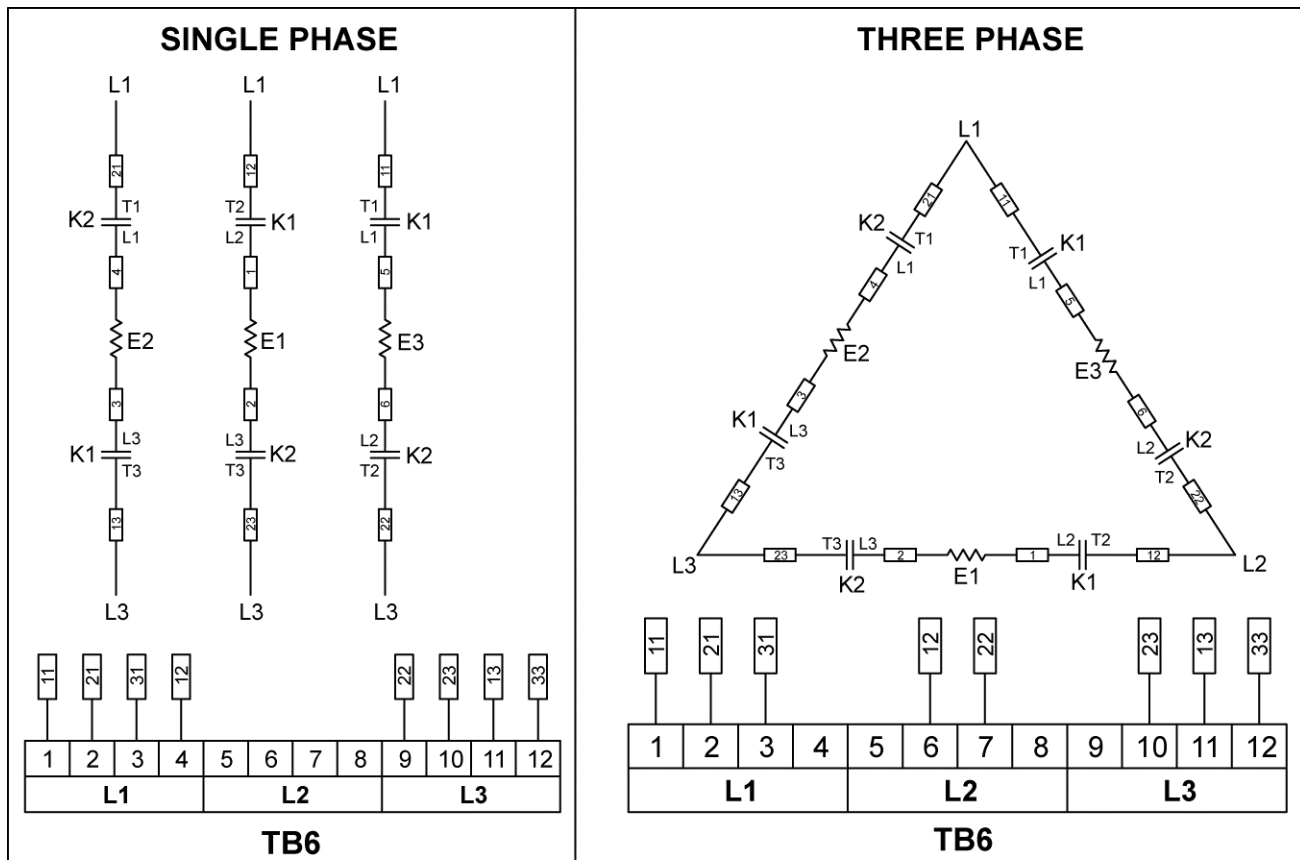


Fig. 127

## Power Connection





AI 2142

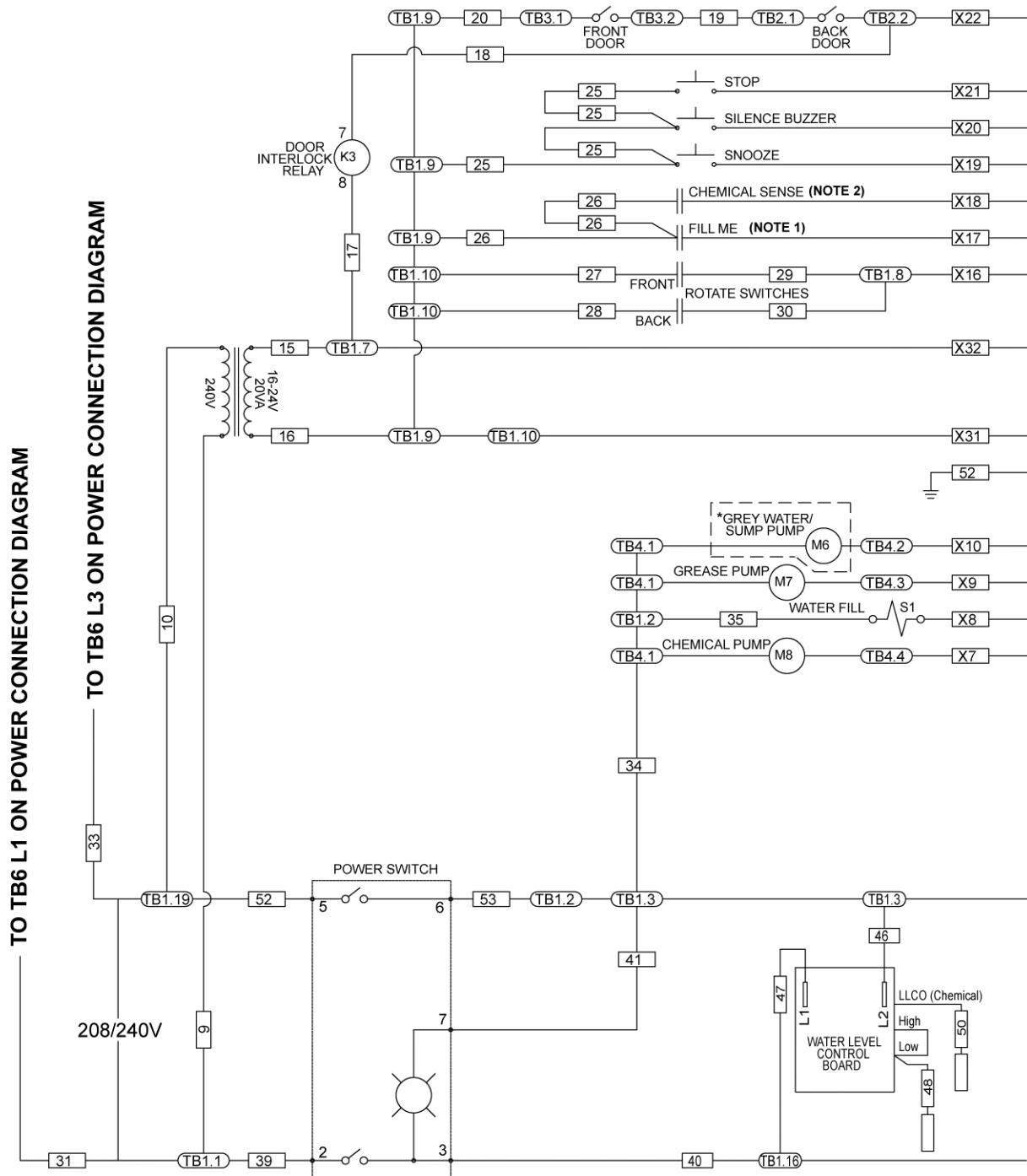
Fig. 128

## SCHEMATIC DIAGRAMS

Model KA7E

**NOTE:**

1. FILL ME relay located on water level control board. Wire X17 attached to Common of H/L Relay. Wire 26 attached to NO of H/L Relay.
2. CHEMICAL SENSE relay located on water level control board. Wire X18 attached to Common of LLCO relay. Wire 26 attached to NO of LLCO relay.



\*Removed from ovens with Serial No.  
46300096 and higher.

**KA7E SCHEMATIC SHEET 1**

AI 3357

Fig. 129

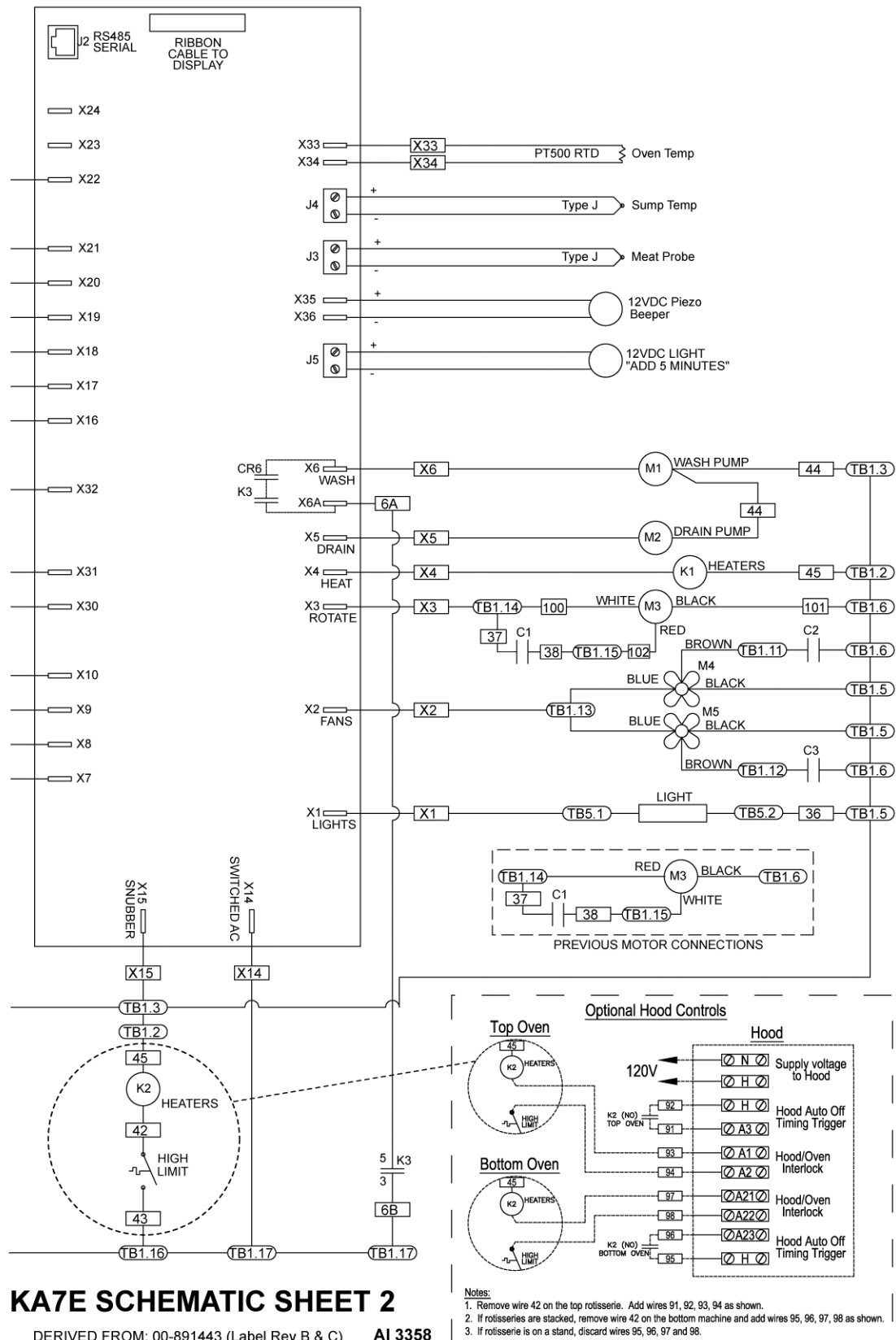


Fig. 130

Model KA7EM

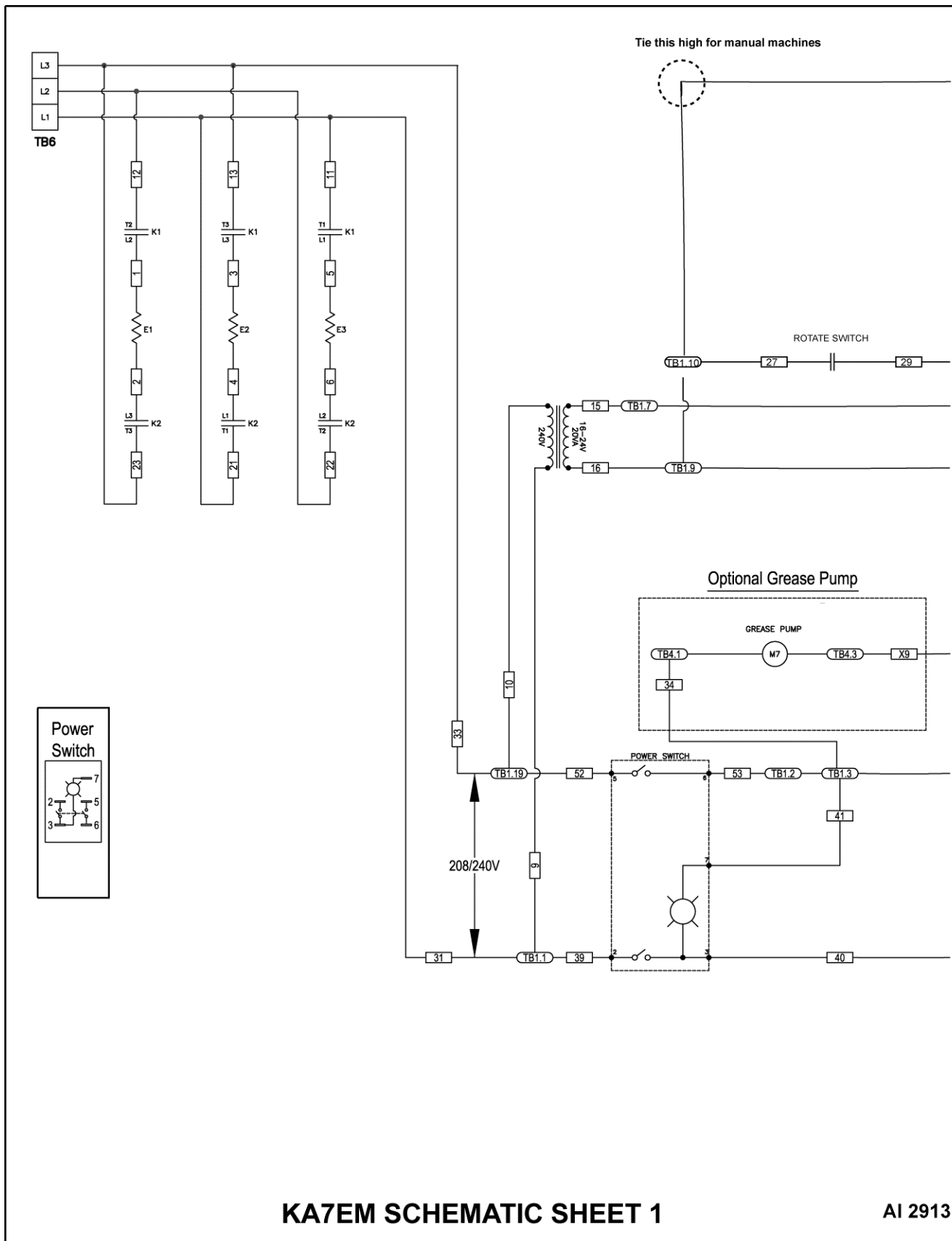
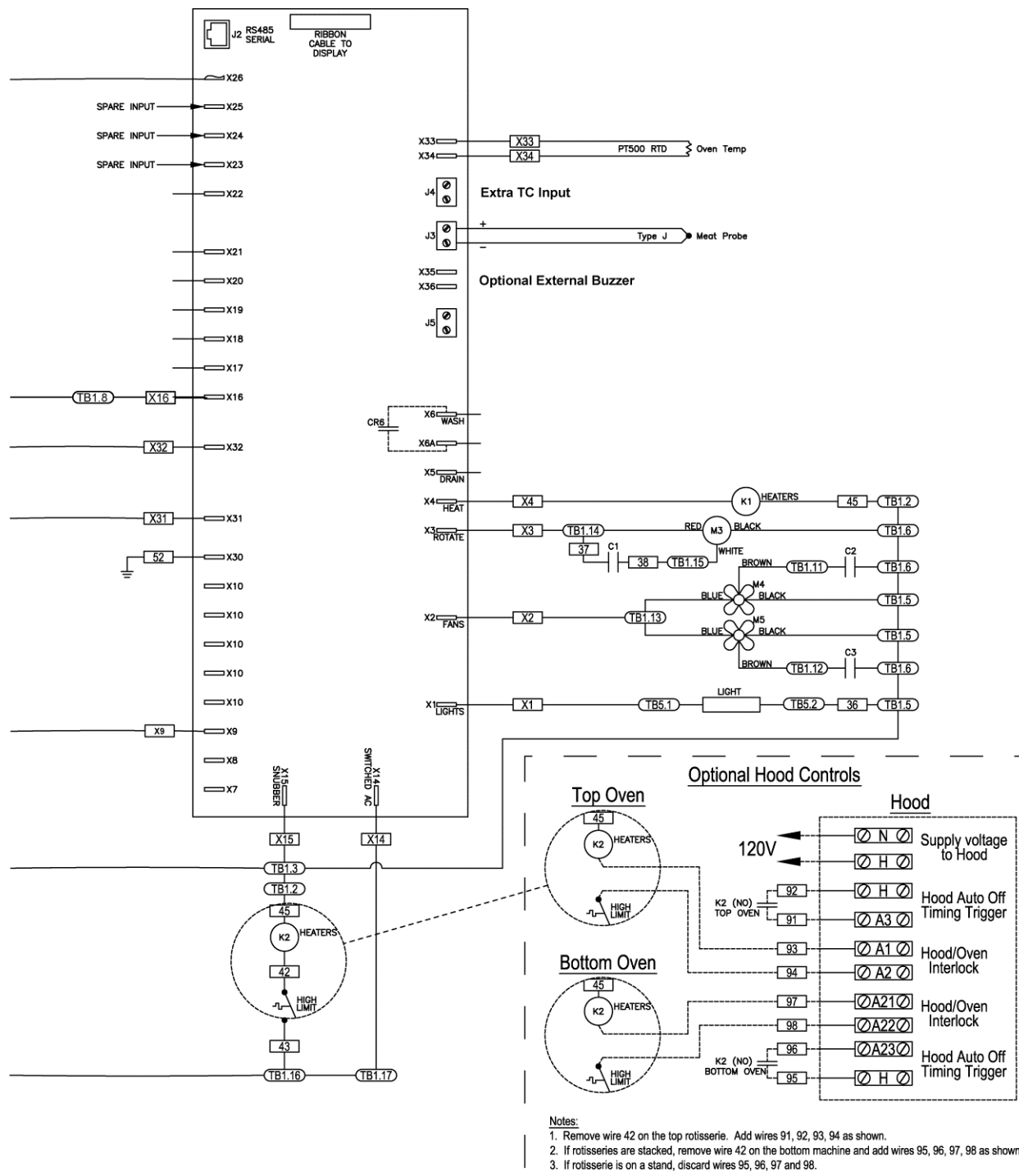


Fig. 131



DERIVED FROM: 00-891572 (Label Rev B)

**KA7EM SCHEMATIC SHEET 2****AI 2914****Fig. 132**

## PLUMBING DIAGRAMS (KA7E ONLY)

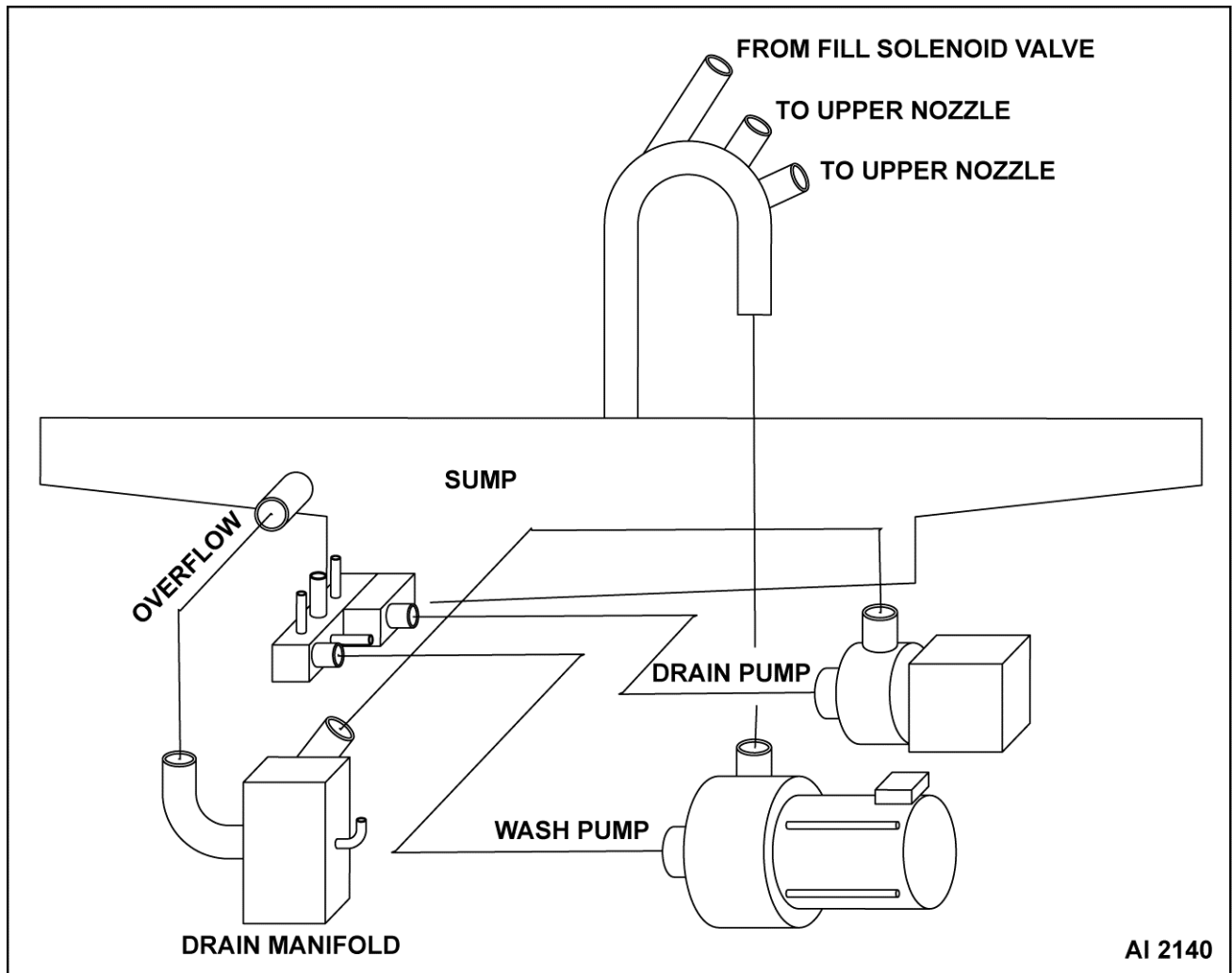


Fig. 133

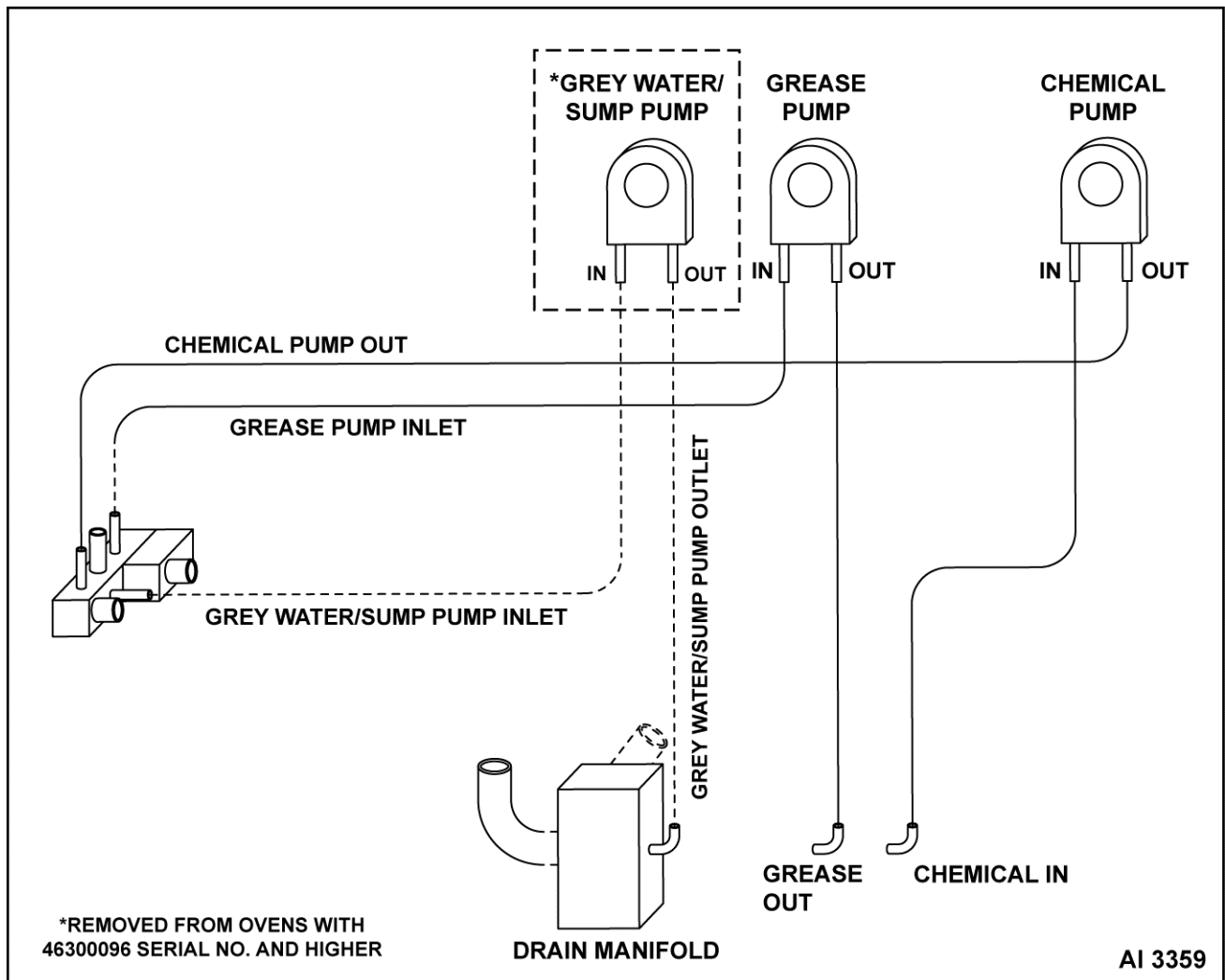


Fig. 134

# TROUBLESHOOTING

## Troubleshooting

Before performing any of the troubleshooting checks listed below, use the SERVICE MODE - PROGRAMMING AND DIAGNOSTICS to assist in diagnosing the problem. By utilizing the oven controls

diagnostic tests the service technician can quickly and easily determine if a component is functioning properly or in need of repair.

**NOTE:** Ensure wiring and board connections are tight and secure; and board connectors are inserted properly (not misaligned).

General Troubleshooting (KA7E & KA7EM)	
SYMPTOM	POSSIBLE CAUSES
Clogging at input and output of peristaltic pumps (KA7E and KA7EM with grease assist only)	TSB 1417 KA7E - CLOGGING AT INPUT AND OUTPUT OF PERISTALTIC PUMPS. See Multimedia section in TIS.
Scrambled VFD display (KA7E only)	TSB 1381 KA7E ROTARY OVEN SCRAMBLED VFD DISPLAY.
Power switch internal indicator light not on but oven operates.	1. Wired incorrectly. 2. Power switch malfunction.
No power to oven controls.	1. Main breaker open. 2. Power switch malfunction. 3. Wired incorrectly.
Main breaker will trip.	1. Oven wired incorrectly. 2. Heat element shorted. 3. Wiring shorted.
Rotor does not turn.  TSI: HR7E AND KA7E ROTISSERIE OVEN ROTOR CRANK ARM DISENGAGING FROM ROTOR. See Multimedia section in TIS.	1. See <u>TROUBLESHOOT ROTOR COMPONENTS</u> . 2. Control board malfunction. Test in P22. 3. Crank arm pins sheared.
Blower motor does not run when cooking.	1. Blower motor malfunction. Test in P22. 2. Blower motor capacitor malfunction. 3. Control board malfunction.
Oven temperature does not reach desired temperature or takes a longer time to heat-up and recover.	1. Incorrect line voltage. 2. Heat element malfunction. 3. High limit thermostat not set to maximum position. 4. Blower motors malfunction. Test in P22. 5. Blower motor capacitor malfunction. 6. Temperature sensor malfunction. 7. Oven out of calibration. 8. Control board malfunction.



General Troubleshooting (KA7E & KA7EM)	
SYMPTOM	POSSIBLE CAUSES
No heat, but blowers, rotor and customer lamp do operate when oven cavity is below set temperature.	<ol style="list-style-type: none"> <li>1. High limit thermostat open.</li> <li>2. K1 contactor malfunction.</li> <li>3. K2 contactor malfunction.</li> <li>4. Control board malfunction.</li> </ol>
No display and/or keypad does not function.	<ol style="list-style-type: none"> <li>1. Display cable connection loose.</li> <li>2. Keypad connection at display circuit board loose.</li> <li>3. Bad ribbon cable.</li> <li>4. Keypad malfunction.</li> <li>5. Display circuit board malfunction.</li> <li>6. Control board malfunction.</li> </ol>
Slow cooking.	<ol style="list-style-type: none"> <li>1. Fan cover not installed correctly.</li> <li>2. Clean oven fans.</li> <li>3. Blower motor(s) malfunction. Test in P22.</li> </ol>

Clean Cycle Troubleshooting (KA7E Only)	
<b>NOTE:</b> During a cleaning cycle, pauses of several seconds may occur as the oven cycles from one mode of cleaning to another mode. This is normal and should not be considered a problem.	
SYMPTOM	POSSIBLE CAUSES
Leaks into control area at drive arm.	TSB1400 KA7E - LEAKS AT DRIVE ARM GASKET DURING WASH CYCLE.
Water is not spraying during wash cycle.	<ol style="list-style-type: none"> <li>1. Wash cycle is in soak mode. Display shows Soaking.</li> </ol>
Wash arm is not turning.	<ol style="list-style-type: none"> <li>1. Strainer pans are not installed correctly and are interfering with wash arm motion.</li> </ol>
Nothing seems to be happening after CLEAN is pressed.	<ol style="list-style-type: none"> <li>1. Oven is cooling down or preheating to the optimum temperature for cleaning.</li> </ol>
Oven is not clean enough after clean cycle is complete.	<ol style="list-style-type: none"> <li>1. Chemical bottle may be empty.</li> <li>2. Ensure tubing is cut at an angle and that standpipe is in place to prevent tube from curling inside chemical bottle.</li> <li>3. Water not hot enough.</li> <li>4. May need additional pre-rinse programmed (P37).</li> </ol>
Too much foam or white residue left after clean cycle.	<ol style="list-style-type: none"> <li>1. Water not hot enough.</li> <li>2. Add second pre-rinse to prime hot water line (P37).</li> <li>3. Make sure washer arm is not plugged. Remove all debris if necessary.</li> <li>4. Increase wash pump duty cycle (P48).</li> <li>5. Increase amount of chemical being used (P31).</li> </ol>

<b>Clean Cycle Troubleshooting (KA7E Only)</b>	
Nothing seems to be happening in clean mode.	1. Time delays are programmed between steps during clean cycle. This is normal operation.
Oven uses too much chemical.	1. Typical usage is approximately 1/2 gallon per day. Contact Product Service.
Grease or liquids running outside of oven.	1. Pump tubing needs to be replaced.
Chemical pump not pulling chemical cleaner.	1. Chemical bottle may be empty. 2. Ensure tubing is cut at an angle and that standpipe is in place to prevent tube from curling inside chemical bottle. 3. Check chemical pump ON time (P31). 4. Clog inside hose inlet or outlet. 5. Hose leaking or air gaps at connections. 6. Pump not receiving power or malfunction. 7. Control board malfunction.

<b>Clean Cycle Troubleshooting - Error Messages (KA7E Only)</b>		
<b>Display Shows</b>	<b>When Displayed</b>	<b>Cause</b>
ERROR 1 CHECK DETERGENT OR CHECK DETERGENT CHECK DETER PUMP	When cleaning agent flow from container into sump is not detected by sensor.	1. Insufficient liquid level in cleaning agent bottle. 2. Pick up tube not submerged in cleaner. Ensure tubing is cut at an angle and that standpipe is in place to prevent tube from curling inside chemical bottle. 3. Defective hose (broken, squeezed closed). 4. Chemical pump or control not working. Test in P22.
ERROR 2 PRESS STOP OR ATTEMPTING TO DRAIN SUMP DRAIN FAIL CHECK DRAIN, PUMP	When there is water in the sump at the start of a clean cycle.	1. Oven drain plugged/not flowing. 2. Drain pump plugged. 3. Drain pump fails to operate or control not working. Test in P22.

Clean Cycle Troubleshooting - Error Messages (KA7E Only)		
Display Shows	When Displayed	Cause
ERROR 3 PRESS STOP OR CANNOT CONTINUE CLEANING CYCLE WATER FAIL CHECK SUPPLY	When no or insufficient water is coming into oven.	1. Main water supply turned off. 2. Supply hose disconnected or kinked. 3. Water pressure too low. 4. Oven fill valve or control not working. Test in P22. 5. Unit draining as it fills. Test in P22.
DOOR IS OPEN CLOSE THE DOOR	When door needs closed during certain steps of the program.	1. Door left open when it should be closed. 2. Door closed position sensor or control not working. Test in P23.
NORMAL WASH MODE OR CLEANING CYCLE PAUSED	Displays when Pause (Rotate) button is pressed during cleaning cycle. Returns to and displays step of cycle that was paused when Pause button is pressed and released, or when door is closed or opened and closed.	---
CYCLE STOPPED	Displays for 5 seconds when STOP key pressed during clean cycle up to and through DRAINING GREASE, or when STOP key is pressed during a cook time.	---
WASH MODE CANCELLED OR CLEANING CANCELLED	Displays when STOP key is pressed during cleaning cycle including and after the CLEANING WATER FILL step for the pre-rinse. Please wait while oven cycles through two rinse cycles and the drying cycle.	---
INTERRUPTED CLEAN CYCLE	Displays when clean cycle interrupted by cycling power off and back on. Please wait while oven cycles through two rinse cycles and the drying cycle.	---

## TROUBLESHOOT ROTOR COMPONENTS

1. If drive hub on gear box does not turn:
  - A. Remove four screws securing rotor drive motor and speed reducer to gearbox.
  - B. Lift motor off speed reducer and support it.
  - C. Press the rotate switch.

- 1) Verify motor shaft rotation as viewed from end of shaft. Rotation must be clockwise. If rotation is counterclockwise, replace capacitor. If motor shaft rotates correctly, continue to step D.
- 2) If motor does not operate.
  - a. Does relay on control board operate?  
 Yes = replace motor and/or motor capacitor.

No = replace control board.

- b. Assemble oven and check operation.
- D. Lift speed reducer off gearbox.
- E. Insert at least two motor mounting screws into motor flange and mate speed reducer to motor. Hold the assembly while pressing the rotate switch.
  - 1) If output shaft on speed reducer rotates, continue to step F.
  - 2) If output shaft on speed reducer does not rotate and motor is running, replace speed reducer. Assemble oven and check operation.
- F. Manually rotate gearbox shaft which mates with speed reducer to verify gearbox function.
  - 1) If crank arm does not rotate or worm gear cannot be rotated, replace gearbox. Assemble oven and check operation.
  - 2) If crank arm does rotate, recheck previous steps to identify malfunction.

# APPENDIX

## REVERSING CONTROLS



**⚠ WARNING** Disconnect the electrical power to the machine and follow lockout / tagout procedures.

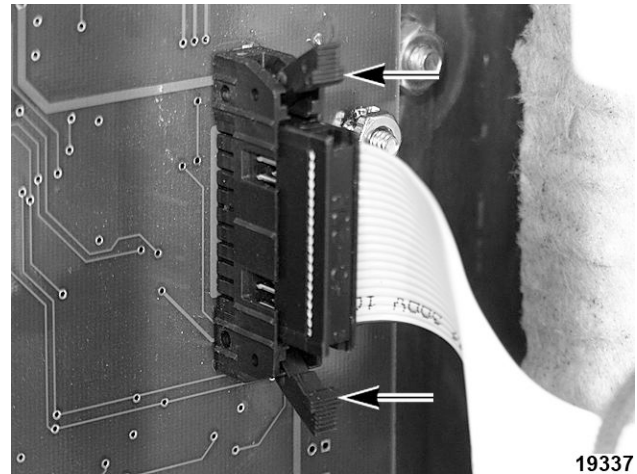
**NOTE:** Rotor on/off switch position does not get changed.

1. Remove Right Side Cover.
2. Disconnect wires from power switch.
3. Squeeze tabs on bezel and pull switch and bezel out of hole.



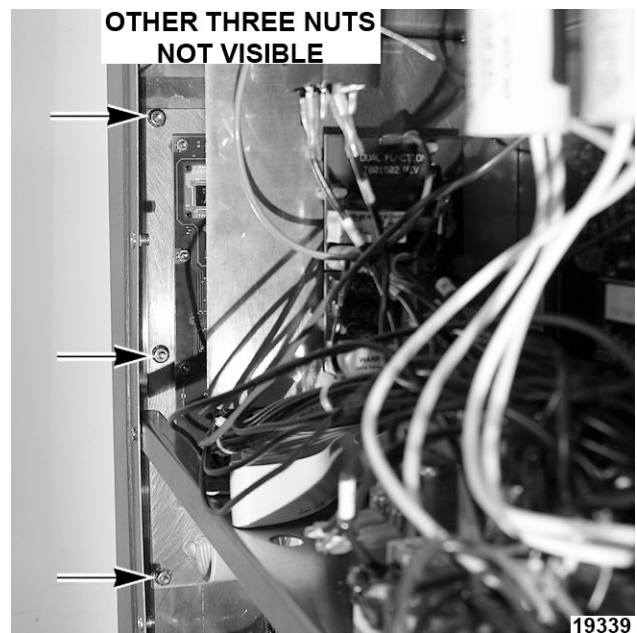
**Fig. 135**

4. Unplug ribbon cable from display board.
  - A. Spread retaining clips to extract plug from socket.



**Fig. 136**

5. Remove six nuts securing display panel with display board attached and lift out of oven.



**Fig. 137**

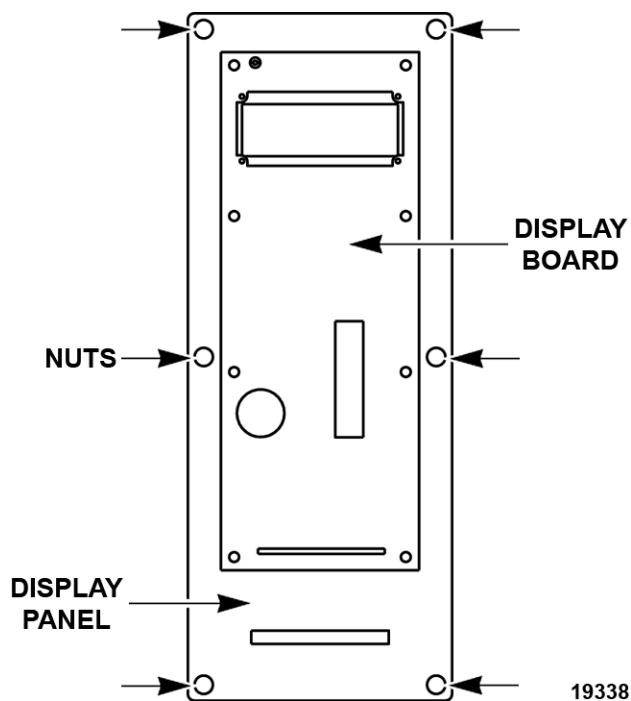


Fig. 138

6. Remove mini jack from front panel.
  - A. Use a small screwdriver or similar object to carefully pry tabs out and work retainer clip off jack.

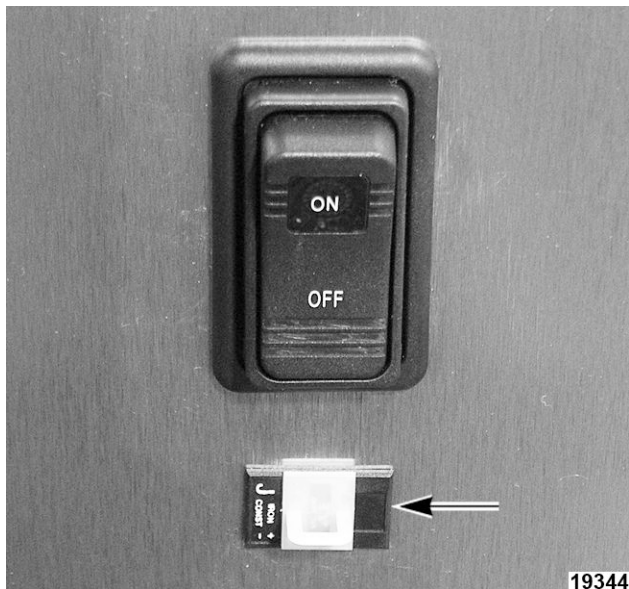


Fig. 139

**NOTE:** Jack shown removed from oven for view. Also notice that wires are polarity sensitive and must be connected properly for correct operation.

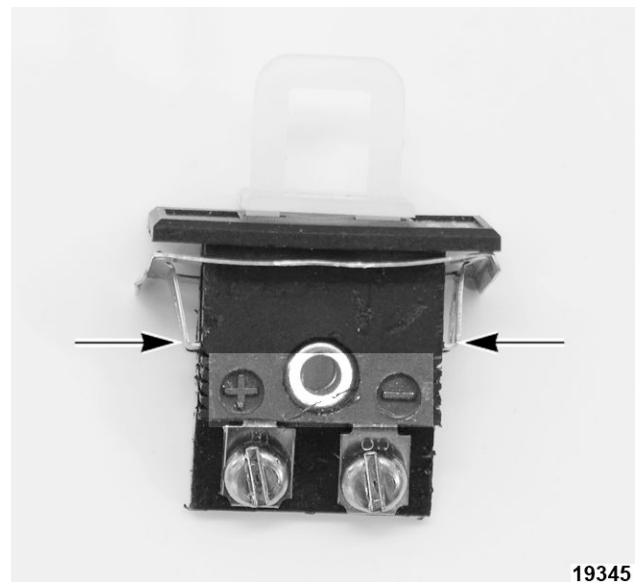


Fig. 140

7. Identify and disconnect wires from mini jack terminals.
8. KA7E only:
  - A. On opposite side of oven, identify and remove wires from momentary switches.
  - B. Remove six nuts securing momentary switch plate and work the plate from the oven.
  - C. Remove two nuts securing the auto clean overlay plate and its retaining plate.
  - D. Install momentary switch plate and auto clean overlay plate on the opposite side of oven.

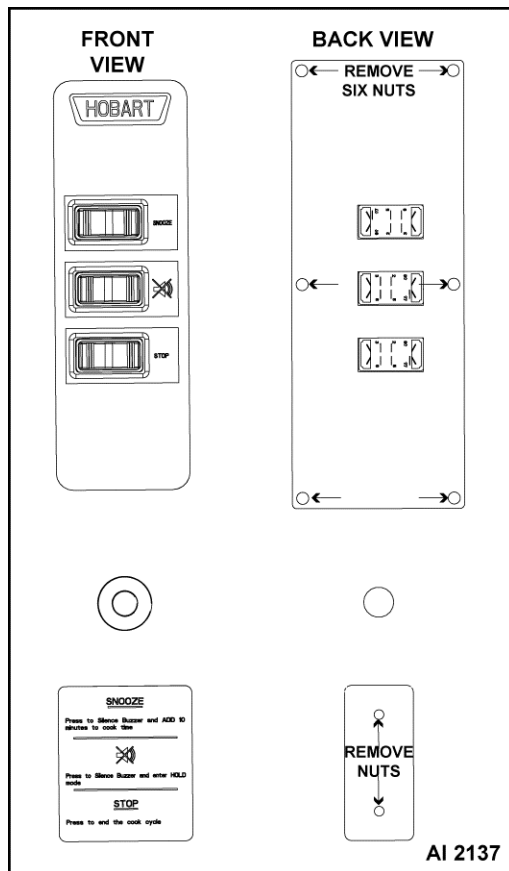
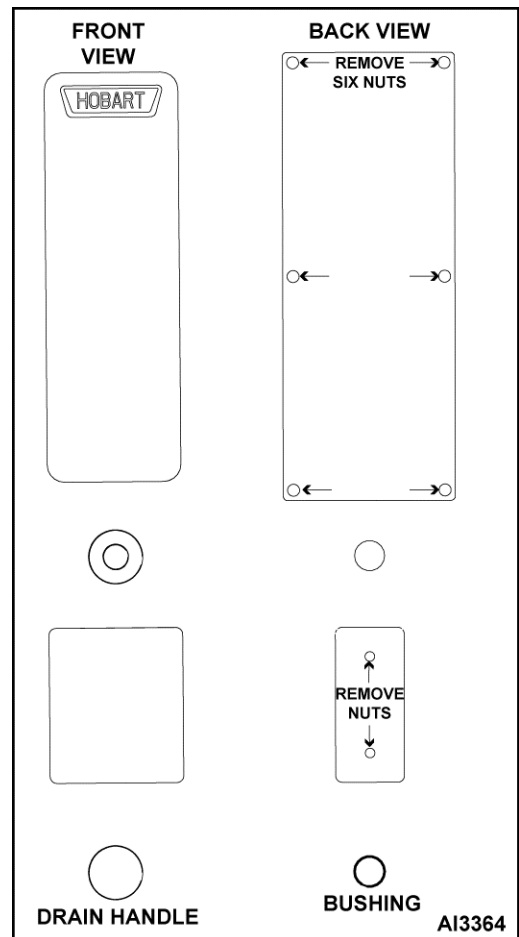


Fig. 141

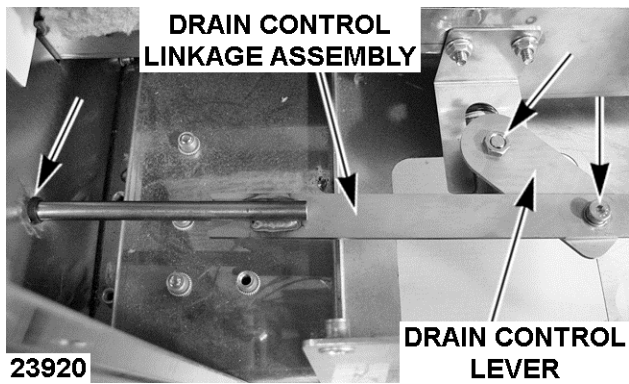
## 9. KA7EM only:

- A. On the opposite side of oven, remove six nuts securing the blank switch cover plate and work the plate from oven.
- B. Remove two nuts securing blank overlay cover plate and its retaining plate.
- C. Install the blank switch cover plate and blank overlay cover plate on the opposite side of where removed.



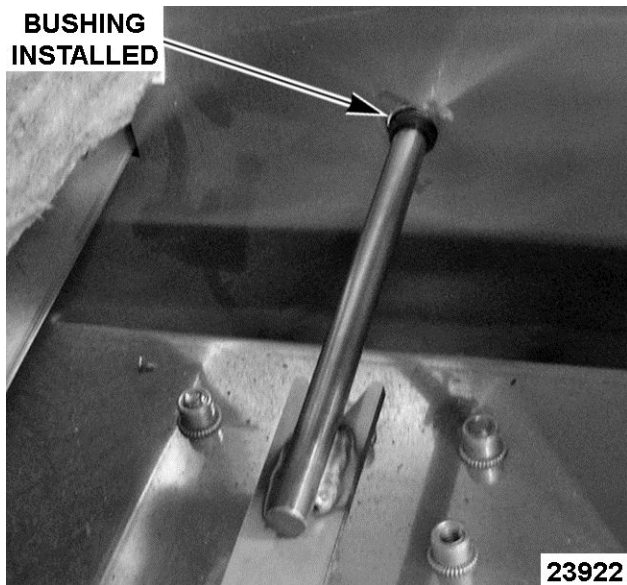
MODEL KA7EM

- D. From front of oven, remove drain handle from the drain control linkage assembly (manual grease/sump drain).
- E. Remove drain control linkage assembly from drain valve and work from oven.
  - 1) Remove drain control lever from linkage assembly.
  - 2) Re-install drain control lever near the end of linkage assembly. See picture 23921 below.
  - 3) Remove bushing from the front of oven.

**Fig. 143**

F. From rear of oven, remove plug and re-install on the opposite side of where removed.

- 1) Install bushing in-place of plug.

**Fig. 144**

- 2) Insert threaded end of drain control linkage assembly through bushing.
- 3) Install drain control lever to drain valve. Secure with mounting nut.

**Fig. 145**

10. Install power switch on the opposite side of where removed.
11. Install display panel with display board on the opposite side of where removed.
12. Cut cable ties as necessary and route wires to their appropriate parts then reconnect.
13. Route ribbon cable to display board and reconnect.
14. Install new cable ties as needed to neatly dress wires out of the way.
15. Install covers and check for proper operation.